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Cover Photo

View upstream on the falls of the Delta River (BLM Recreation Staff).

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Water Resources of the Delta Wild and Scenic River, Alaska

Stream Gage Data, 1993–2022

BLM-Alaska Open File Report #130

January 2025

U.S. Department of the Interior
Bureau of Land Management
Mike Sondergaard and Jon Kostohrys

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Abstract

This report summarizes stream gage information collected by the Bureau of Land Management (BLM) from 1993 through 2022 in the Delta River/Tangle Lakes watershed. The information presented supports achievement of various BLM management goals and objectives for this watershed, with an emphasis on the Delta Wild and Scenic River Corridor.

Title VI, Section 603, part C (47), of the 1980 Alaska National Interest Lands Conservation Act (ANILCA) designated the upper stretch of the Delta River watershed, all Tangle Lakes, and the Tangle River watershed (referred to as the Delta Wild and Scenic River Corridor) as a new addition to the National Wild and Scenic River System. Congress established the National Wild and Scenic River System in 1968 (PLO 90-542, 16 U.S.C. 1271 et seq.). The Delta Wild and Scenic River Corridor (WSRC) designation classifies approximately 18 river miles as "recreational" (i.e., readily accessible by road and having some development along shorelines) and approximately 20 river miles as "wild" (i.e., water bodies considered free of impoundments; generally inaccessible except by trail; and watersheds or shorelines of essentially primitive, unpolluted waters). ANILCA also designated but did not classify all the Tangle Lakes and the Tangle River as a component of this system (BLM, 1983).

The Delta River watershed just below Black Rapids drains approximately 280 square miles, with the river originating in the upper Tangle Lakes just east of Dickey Lake at about 3,000 feet and flowing north through the Alaska range. The Delta River eventually drains into the Tanana River (just north of Delta Junction) and then into the Yukon River, which meanders hundreds of miles through Alaska until it enters the Bering Sea. The Delta River was designated as a wild and scenic river based on its unique cultural, recreational, fish, wildlife, scenic, and other socio-economic values.

Management objectives established in the 1983 and 2013 River Management Plans for the Delta WSRC include maintaining the pristine, free-flowing condition of the river and tributaries; optimizing long-term use of its fish and wildlife resources; and maintaining high-quality, primitive recreational opportunities. This report summarizes BLM long-term streamflow data and other relevant hydrologic and physical information, supporting the goals of both River Management Plans, as well as other BLM goals and objectives for the Delta WSRC and watershed.

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Introduction

This open file report summarizes long-term and instantaneous stream gage data collected by the BLM from 1993 through 2022. Data collected and analyzed are within the Delta Wild and Scenic River Corridor (WSRC) and watershed (Figure 1). Other relevant hydrologic and physical information collected in this watershed between 1993 and 2022 are also reported. This information is summarized to support various BLM management goals and objectives for the corridor and watershed.

The Delta River is a clear-running, freshwater stream from its headwaters until its confluence with Eureka Creek. From the Eureka Creek confluence, downstream just past the confluence with Black Rapids and the north end of the Delta WSRC, turbidity is elevated from inflow of highly turbid glacier meltwater from numerous glacial-fed tributaries. A large portion of the Delta River watershed was added to the National Wild and Scenic River system on December 2, 1980, as an element of ANILCA. ANILCA classified and designated approximately 18 miles of the Delta River as a "recreational" river and approximately 20 miles as a "wild" river, pursuant to the Wild and Scenic Rivers Act (WSRA, P.L. 90–542). ANILCA also designated but did not classify all the Tangle Lakes and the Tangle River as a component of this system (ANILCA, Public Law 96–487).

The WSRA specifically mandates that "Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system..." (Section 10(a)). This designation is also consistent with the Federal Land Policy and Management Act (FLPMA) mandate to manage public lands "...in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition..." (FLPMA 1976, Sec. 102 (a)(8)) (43 USC 1701). In addition, these mandates will allow the BLM to meet its obligations under Title VIII of ANILCA (P.L. 96–487) to protect and provide the opportunity for continued subsistence uses on the public lands by Native and non-Native rural residents of Alaska.

Management objectives established for the Delta WSRC include maintaining the pristine, free-flowing condition of the river and tributaries; optimizing long-term use of its fish and wildlife resources; and maintaining high-quality, primitive recreational opportunities (BLM 1983, BLM 2013). Consistent with these objectives, in 2009 the BLM submitted instream flow water reservation applications for two segments of the Delta WSRC to the Alaska Department of Natural Resources (DNR). The segment 1 instream flow application extended from the south end of the Delta WSRC in the upper Tangle River and upper Tangle Lakes downstream to the waterfall and portage below Long Tangle Lake. The segment 1 application was rejected by the Alaska DNR; they determined that a single instream flow application could not cover the extent of the reach and the lakes that intersect the reach. The segment 2 instream flow application, extending from Wildhorse Creek to Eureka Creek is pending adjudication at time of publication of this report. The hydrologic information reported in this publication may be used to support the adjudication and/or amendment of existing applications. The information may also be used to create new water reservation applications for additional stream reaches, as needed.

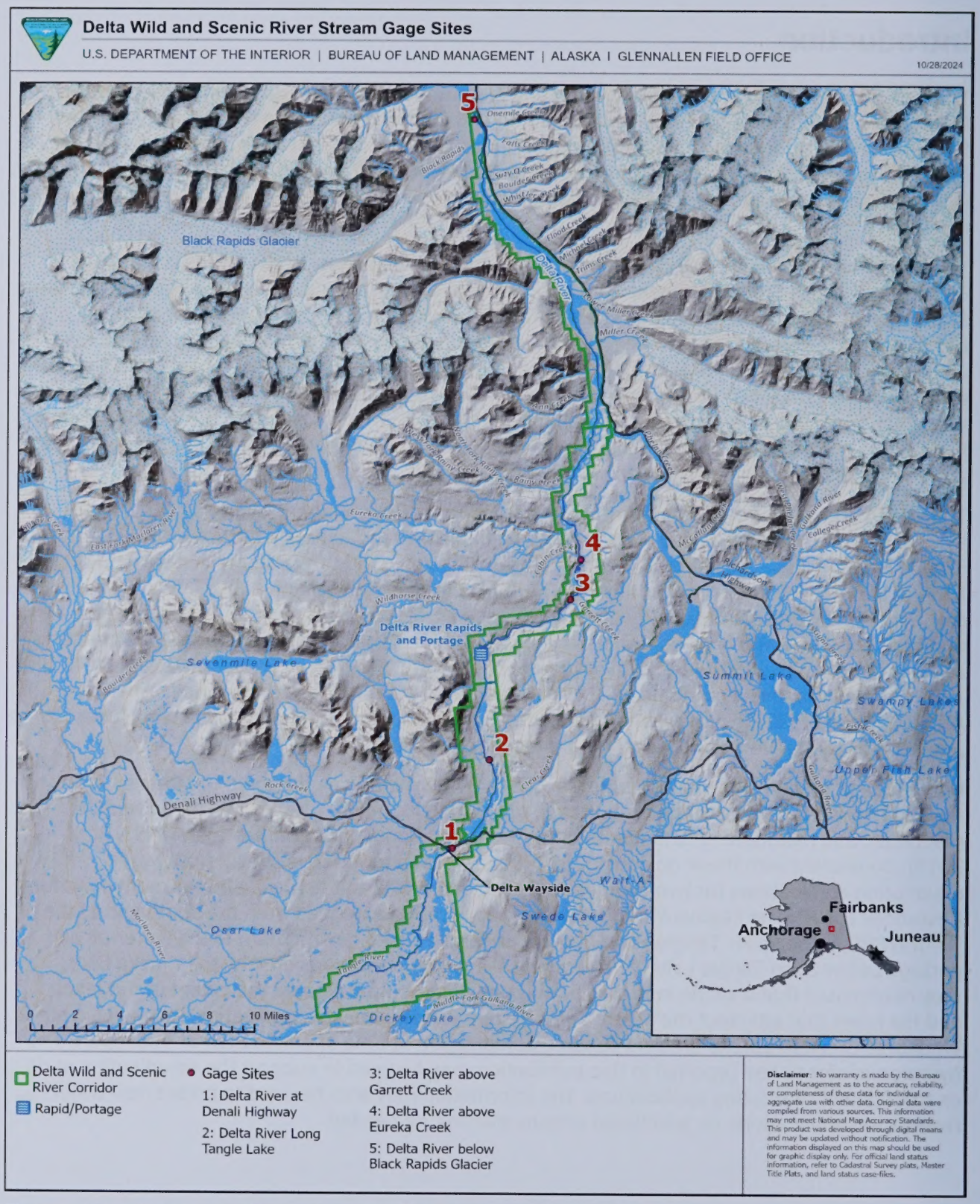

Figure 1. Map of BLM gage sites on the Delta Wild and Scenic River Corridor.

Description of the Study Area

Physiography

The Delta River watershed, from the headwaters of Tangle River and Tangle Lakes to just below Black Rapids (Figure 1), drains approximately 280 square miles within the Alaska Range. The Tangle River flows through and connects 160 miles of streams and 150,000 acres of lakes (a total of 21 lakes) before finding its way to the Delta River. The Delta River then flows north to join the Tanana River, and eventually the Yukon River, before draining into the Bering Sea (BLM and others 2024).

The Delta WSRC lies entirely within the Alaska Mountains Section physiographic unit. Elevation at Upper Tangle Lakes is approximately 2,900 feet and approximately 2,200 feet at Black Rapids. The mountains near Long Tangle Lake are the highest point within the Delta WSRC, at an elevation of 5,295 feet.

The Tangle Lakes in the southern half of the Delta WSRC consist of a glaciated intermontane basin, dominated by porous gravelly glacial outwash deposits. The landforms include hills, pitted outwash plains, kettle lakes, and sinuous eskers. Surface drainage patterns are not well established and only a few of the many lakes within the area are connected by streams. The topography is covered in alpine communities. Shrub birch and willow scrub are interspersed with large patches of lichen and exposed sand and gravel. Cottongrass tussock communities occupy broad, small depressions throughout the basin (Clark 2005).

The northern half of the Delta WSRC includes a narrow passage of floodplains, terraces, and mountain slopes adjacent to the Delta River. The Delta River is a clear-water stream from its source at upper Tangle River to its confluence with Eureka Creek, a distance of about 32 river miles. From the Tangle Lakes outlet to the falls at the head of the gorge, the river is approximately 130 feet wide, shallow, and low velocity. The gorge is a narrow rock chasm with a constricted, high-velocity river channel and a series of small waterfalls that require portaging. The canyon below the gorge is narrow, with a confined boulder bed channel of moderate velocity. Alpine scrub communities line this canyon portion of river and its slopes. A narrow band of exposed bedrock caps the canyon rim (Clark 2005).

The river slows below the canyon, channels become deeper, and the valley widens. The river is braided into several channels with an average width of 35 feet. Beaver dams on some channels have created ponds that provide for excellent grayling habitat and recreational fishing opportunities. Riparian scrub communities line this portion of the river, with occasional spruce woodlands interspersed with scrub on alluvial fans and mountain slopes adjacent to the river (Clark 2005).

Approximately 3 miles above the Eureka Creek confluence, the Delta River has a single, approximately 100-foot-wide main channel. This portion of the river is characterized by significantly lower flow velocity and a bed composed of sand and silt. Large alluvial fans and mountain slopes with ericaceous-sedge scrub descend to the river's edge along this stretch (Clark 2005).

At Eureka Creek, a glacial stream originating in the Alaska Range, the Delta River changes to a braided, turbid glacial river. Total floodplain width ranges from about 1,000–3,000 feet and consists of multiple channels and many non-vegetated bars. The average stream width is about 200 feet (BLM 1983). Plant communities include riparian scrub on floodplains and fans with occasional riparian spruce forests on higher terraces and fans (Clark 2005).

The entire Delta WSRC is bounded by mountains of the Alaska Range. Encircling the Tangle Lakes are low mountains rounded by past glaciations and covered with alpine scrub. Along the lower Delta River, tectonically active fault-block mountains are mantled in colluvium and vegetated with tall alder scrub. Areas of ericaceous-sedge scrub with permafrost are found on more gently sloping mountains and more northerly exposures (Clark 2005).

Upland landforms in the Tangle Lakes area are mantled with a thin, discontinuous layer of silty loess. Most loess was deposited rapidly at the end of the last glaciation when receding glaciers left large areas of ground exposed to winds. Along the lower part of the Delta River, winds continue to deposit dust from the broad, barren floodplain onto the adjoining uplands. These deposits are locally thick because of their close proximity to the floodplain source. Areas with the thickest deposits (a foot or more) are present on hills near the Delta River along the northern edge of the river corridor (Clark 2005)

Climate

The climate of the Alaska Range is subarctic continental and is characterized by long, cold winters and short, warm summers. Mean January temperature is -1°F at Paxson, Alaska (north of Paxson Lake, east of Delta WSRC) (Table 1). Daily low temperatures of -50°F or less occur frequently during the winter. Two week or longer periods of severe cold weather are common. Mean July temperature is 54°F at Paxson. Daily high temperatures in summer occasionally exceed 80°F. Daily minimum temperatures in summer are generally 37–42°F; however, freezing temperatures have been recorded in every month.

Table 1. Monthly temperature and precipitation data for Paxson, Alaska. Publicly available period of record, 1975–2010 (source: Western Regional Climate Center).

Month	Temperature			Precipitation	Snow
	Maximum Monthly Average (°F)	Minimum Monthly Average (°F)	Mean Monthly Average (°F)	Mean Monthly Total (inches)	Mean Monthly Total (inches)
January	8.3	-10.2	-0.7	1.0	15.3
February	15.6	-5.2	4.9	0.8	10.6
March	24.9	-0.1	12.7	0.8	11.3
April	37.1	13.9	25.5	0.6	5.3
May	51.7	29.1	40.1	0.6	2.8
June	63.7	38.2	51.0	1.3	0.4
July	65.5	42.1	53.8	2.5	0.0
August	60.7	38.7	49.7	3.2	0.0
September	48.7	30.5	39.5	3.2	3.6
October	32.1	15.6	23.9	2.1	16.8
November	14.9	-2.3	6.3	1.0	14.9
December	11.0	-5.9	1.8	1.4	19.9
Annual Average	36.7	15.4	25.7	–	–
Annual Total	–	–	–	21.1	100.9
Extreme Value	86.0	-50.0	–	–	–
Extreme Date (month/year)	06/04	01/09			

Mean annual precipitation at Paxson is 21.1 inches (Table 1) with an average annual snowfall of 100.9 inches. Short summer rain showers occur frequently in the Tangle Lakes area. The autumn freeze usually occurs in October, and the spring thaw normally comes in late May or early June (Clark 2005).

Permafrost

The mean annual air temperature in the Delta River area is 25.7°F, and the area lies within the zone of discontinuous permafrost. Permafrost is ground (i.e., sand, silt or soil) that remains frozen for 2 or more years. In the Tangle Lakes area, shallow permafrost occupies less than one-third of the landscape; it is generally limited to depressions with cottongrass tussock vegetation and ice-cored mounds adjacent to lakes and streams with dwarf birch-ericaceous scrub. Permafrost is generally absent on floodplains and stream terraces along the Delta River. The mountains along the perimeter of the Tangle Lakes and the Delta River have a typical distribution of permafrost related to localized site and soil properties. Permafrost is generally absent in gravelly and cobbly soils on steep slopes. Permafrost is continuous in soils formed in thick, silty, or loamy deposits on gentle, sloping landforms, including broad mountain summits and alluvial fans (Clark 2005).

Within the Delta WSRC, the depth at which permafrost occurs and the ice content varies widely. In most places, permafrost has small crystals and thin veins of ice disseminated throughout the soil. On gently sloping mountain summits and alluvial fans, permafrost restricts drainage, resulting in a perched water table and saturated conditions. Peat mounds typically have shallow permafrost and a core of massive ice. The surface peat is usually well drained and relatively dry (Clark 2005). While permafrost has an impact on surface water/groundwater relationships, the specific significance of the impacts of permafrost soils on the hydrology of the Delta WSRC is generally complex and often difficult to differentiate.

Methods and Data Sources

Stream gage networks are commonly installed to provide information on seasonal and long-term mean daily continuous streamflow, reported as cubic feet per second (cfs), over multiple drainage basins. A stream gage network consists of an index gage station operated over a long time period (typically many years) and an associated network of semi-permanent stream gages, which are operated concurrently on other reaches of the indexed stream, tributaries of the indexed stream, and sometimes other nearby hydrologically similar streams (Klein 2013).

The objective for establishing a stream gage network is to cost-effectively collect a combination of flow records for different lengths in a drainage to be able to extend the periods of record for the short-term sites to be equal to or greater than 5 years. This is accomplished by correlating short-term (less than 5 years) stream gages with those having long-term (5 years or longer) historical periods of continuous record to allow accurate estimation of flows over the longer time period. Stream gage networks are also designed to increase the precision and accuracy of seasonal and long-term hydrologic estimations for short-term gage locations and reduce uncertainty for sites with limited or no data (Klein 2013) and/or data gaps.

Continuous Long-Term Gage Data Description Summaries

To obtain at least 5 years of continuous mean daily flow records at strategic locations within the Delta WSRC, the BLM operated a network of semi-permanent (i.e., operating greater than 5 years) continuous measurement gages. Locations of each are illustrated on Figure 1 and summarized in Table 2. BLM stream gage measurement and analyses methods followed U.S. Geological Survey (USGS) procedures described in Rantz and others (1982) and in Melcher and Walker (1990).

Table 2. Summary of long-term, BLM gage site locations and periods of record.

Site Number	Stream survey site name	Latitude	Longitude	Period of Record
1	Delta River at Denali Highway	N 63°02′39.7″	W 146°01′37.2″	1993–2005
2	Delta River at Long Tangle Lake	N 63°06′4.3″	W 145°57′32.9″	2000–2005
3	Delta River above Garrett Creek	N 63°12′8.7″	W 145°48′58.6″	2000–2022
4	Delta River above Eureka Creek	N 63°13′42.7″	W 145°47′40.2″	1997–2005
5	Delta River below Black Rapids	N 63°31′51.1″	W 145°52′8.3″	2008–2021

Descriptions of BLM Long-Term Gage Sites Results

Delta River at Denali Highway, Gage Site 1

Gage Site 1 (Figure 2) is located on the right riverbank (looking downstream) of the Delta River, opposite the Delta wayside boat launch, along the Denali Highway at approximately milepost 21.6. The BLM began operating this continuous measurement gage in June 1993 and discontinued gage operations in September 2005, resulting in 13 years of data. For the period of record, continuous recorded gage data were collected only during the late spring, summer, and early fall, generally from late May/early June to late September/early October.

On July 1, 1993, a staff gage and Datapod (Ominidata International, Inc.) data logger were installed on the upstream side of the Delta wayside boat launch. Between the years 1993 and 1996, the staff gage stream depth data (i.e., date, time, stage reading, other relevant notes) were read at least daily during the operational period and recorded in survey notebooks by BLM staff or campground hosts. The data logger was subject to periodic vandalism or malfunction, so the staff gage was often the primary source of gage readings. Staff gage stage data continued to be recorded through 2003 and was occasionally used as a secondary data source for calculating long-term daily discharge values.

From 1997 to 2005, stage data were recorded by a Stevens AxSys System data logger (http:// www.stevenswater.com/) with a Stevens submersible depth transmitter (SDT) II (accuracy -1% of full scale, 4.0 ± 0.2 mA at 22° C). The SDT transducer cable and transducer was weighted down with small sections of rebar or cobble-sized rock to the river's edge where the cable was buried 3 inches into the soil until it reached the AxSys data recorder. The data recorder was programmed to record maximum stage every hour and was housed in a small metal container hidden under

Figure 2. Delta River at Denali Highway, Gage Site 1.

moss and dwarf birch. The stream gage was surveyed to elevation reference marks and to the current water level using an engineer's level and stadia rod. There were two benchmarks established near the gage area, both using a concrete slab from the boat launch. Discharge (streamflow) measurements were made 3–5 times per open water season. A Price AA or Pygmy current meter was used to measure water velocity, and a top-setting wading rod and tag line were used to measure water depth and width. All discharge measurements were made by wading. The stream remained open (ice free) for the winter period, allowing measurements to be made using the same equipment used during the spring, summer, and early fall periods. Typically, there was at least one measurement collected during the winter in the later stage of the season.

Delta River at Long Tangle Lake, Gage Site 2

Gage Site 2 (Figure 3) is located on the Delta River within the Long Tangle Lakes system. It is approximately 4.3 miles downstream from the Tangle Lake campground boat launch and located at approximately river mile 19.5 of the Delta River. It is found along the right bank of river, looking downstream. The BLM began operation of an automated gage at this site in June 2000 and discontinued the gage in September 2005, resulting in 6 years of data. For the period of record, continuous recorded gage data were collected only during the late spring, summer, and early fall during ice-free periods, generally from late May/early June to late September/early October.

For the period of record, stage data were recorded by an AxSys electronic data recorder, similar to Gage Site 1. All of the data recorder settings and deployment methods were similar to Gage Site 1. There were two benchmarks established near the gage area, both using small boulders that were mostly embedded in the ground and stable. Discharge (streamflow) measurements were made following procedures similar to Gage Site 1. For the winter period, under-ice discharge measurements were not performed at this site due to hazardous ice conditions; they were estimated using data from Gage Site 1. For the period of record (June 2000–December 2005), there were 23 instantaneous discharge measurements made at the Delta River at Long Tangle Lake gage site.

Figure 3. Delta River at Long Tangle Lake, Gage Site 2.

Delta River above Garrett Creek, Gage Site 3

Gage Site 3 (Figure 4) is located on the left bank (looking downstream) of the Delta River, approximately 5 miles downstream of the falls and portage at approximately river mile 31. The BLM began operation of this automated gage site in July of 2000, and it is still in operation. This report includes Gage Site 3 data up to December 2022.

For the period of record, continuous recorded gage data were collected only during the late spring, summer, and early fall during ice-free periods, generally from late May/early June to late September/early October. From July 2000 through 2005, river stage data were recorded by an AxSys electronic data recorder, similar to Gage Site 1. From 2006 to present, river stage data have been collected and stored on site by a Sutron Satlink data logger (http://www.sutron.com/) with a Pressure System/KPSI pressure transducer (http://www.pressuresystems.com; accuracy ± 0.01 feet) or an OTT Hydromet PLS pressure transducer (www.otthydromet.com). The Sutron data logger is housed in a weatherproof, treated wood box and is programmed to record stage, water temperature, air temperature, and precipitation every hour. For water temperature, air temperature, and precipitation data, routine quality assurance measures and inspections are not performed at a level acceptable for use in general scientific and interpretive studies.

The stream gage was surveyed to elevation benchmarks located near the gage site and to the current water level using an engineer's level and stadia rod. There are two temporary benchmarks that were established on the same bank near the gage site, both using 4-foot-long, spaded survey stakes with unlabeled brass caps.

Cross-sectional discharge (streamflow) measurements were made similar to Gage Site 1. Most discharge measurements were made by wading; however, high-flow events required the use of boat measuring equipment (a boom and cross piece assembly with a sounding real and weight), with the Price AA current meter.

Figure 4. Delta River above Garrett Creek, Gage Site 3.

More recently (2014 to present), discharge measurements have been accomplished using a Teledyne StreamPro or Teledyne RiverPro acoustic doppler current profilers (ADCP). For the winter period, under-ice discharge measurements were made by drilling a series of holes in the ice to define the cross-section, then measuring the depth and velocity in each hole using a USGS vertical-axis, vane type current meter mounted on a graduated rod. For the period being documented in this report (June 2000–December 2022), there were 93 instantaneous discharge measurements made at the Gage Site 3.

Delta River above Eureka Creek, Gage Site 4

Gage Site 4 (Figure 5) is located approximately 2 miles upstream from the Eureka Creek confluence at approximately river mile 34.5 of the Delta River. The gage is on the right bank of river, looking downstream. The BLM began operation of an automated gage at this site in June 1997 and discontinued the gage in March 2005, resulting in 8 years of data. For the period of record, continuous recorded gage data were collected only during the late spring, summer, and early fall during ice-free periods, generally from late May/early June to late September/early October.

For the period of record, stage data were recorded by an AxSys electronic data recorder, similar to Gage Site 1. All of the data recorder settings and deployment methods were similar to Gage Site 1. There were two benchmarks established near the gage area, both using the base of large spruce trees with 8-inch spike nails. Cross-sectional discharge (streamflow) measurements were made similar to Gage Site 1. Most discharge measurements were made by wading; however, high flow events required the use of boat measuring equipment similar to Gage Site 3. For the winter period, under-ice discharge measurements were obtained following procedures similar to Gage Site 3. For the period of record (June 1997–March 2005), there were 36 instantaneous discharge measurements made at the Delta River above Eureka Creek gage site.

Figure 5. BLM hydrologists drill holes for under-ice discharge measurements at Delta River above Eureka Creek, Gage Site 4.

Figure 6. Delta River below Black Rapids, Gage Site 5.

Delta River below Black Rapids, Gage Site 5

Gage Site 5 (Figure 6) is located on the Delta River approximately 1.3 miles downstream from the Black Rapids, at approximately river mile 61.5 of the Delta River, near milepost 227.5 of the Richardson Highway. The gage is on right bank of the river, looking downstream. The BLM began operation of an automated gage site here in June 2008 and discontinued the gage in March 2021, resulting in 13 years of data. For the period of record, continuous recorded gage data were collected only during the late spring, summer, and early fall during ice-free periods, generally from late May/early June to late September/early October.

For the period of record, stage data were recorded by an AxSys electronic data recorder, similar to Gage Site 1. All of the data recorder settings and deployment methods were similar to Gage Site 1. Two temporary benchmarks were established on the same bank as the gage equipment, both using two large rocks mostly embedded into the ground and stable.

Cross-sectional discharge (streamflow) measurement methods varied depending on flows levels at the site. High flows were generally considered unsafe and beyond the flow-measuring capabilities of our equipment. Many of the early discharge measurements were made using boat measuring equipment with the Price AA current meter. Some of the later measurements were performed using Teledyne StreamPro or Teledyne RiverPro ADCP. The use of an ADCP was safer, easier, and quicker than collecting data with the AA meter (Mueller 2009). Peak flows were confirmed by computer-generated flows using Manning's equation, and recorded peak values were determined by rating extension above the highest measured flows. For the winter period, under-ice discharge measurements were obtained following procedures similar to Gage Sites 3 and 4. For the period of record (June 2008–March 2021), there were 30 instantaneous discharge measurements made at Gage Site 5.

Long-Term Gage Station Methods

The techniques and standards for making discharge measurements at gage stations followed what is described in Turnipseed and Sauer 2010. Site visits were made at all BLM continuous (long-term, year-round) data gage locations 3–7 times a year to download data, measure discharge, perform routine maintenance, and survey water levels for quality control/assurance. Each site was established to measure both continuous hourly stage values, along with instantaneous discharge measurements of volumetric flow rate (discharge in cfs) throughout the entire year. These measurements were used to establish a rating curve of the stage-discharge relationships to allow computation of continuous discharge values. The values of continuous discharge were then statistically summarized into mean daily values over the full range of seasonal flows throughout the open water period (when the data recorder was operational).

Gage sites were accessed by adjacent roads, boat during ice-free periods, and snowmachine during winter months (or a combination thereof). Access to Gage Site 1 during ice-free periods was by highway vehicle. Gage Site 1was located at the boat launch at the Delta Wayside on the Denali Highway (mile 21.6). Access to Gage Site 2 during ice-free periods was by jet boat from the Tangle Lakes boat launch. Gage Sites 3 and 4 were also accessed with a jet boat by launching the boat at unimproved sites near Phelan Creek and boating upstream on the Delta River to the gage sites. Gage Site 5 was accessed by highway vehicle on the Richardson Highway (at mile 227.5), followed by a short ¼-mile hike from the highway to the gage site. During the winter period, all the BLM gages except for Gage Site 5 (which was accessed by highway vehicle) were accessed by snowmachine. After each site visit, discharge data recorded in survey books were input into Excel spreadsheets and stored on the BLM computer server.

The BLM uses a systematic process of streamflow records computation following those described in Rantz and others (1982), Melcher and Walker (1990), and Parks and Madison (1985). Excel spreadsheets and included functions are used to make all discharge computations. Before being converted to discharge, the stage records were corrected to reference elevation based on level surveys. These corrected stage values are used to develop rating curves, then shifts are applied to the rating curves due to fill and scour of the hydraulic control. The discharge from the rating curves is then used to compute hourly discharge values, which are the basis to compute mean daily, mean monthly, and mean annual flow values for the calendar year, January–December. Where no discharge measurements were collected at the gage sites or when the recorded data were considered unreliable during the spring ice breakup, fall freeze-up, or when the recorder malfunctioned, the data were estimated from a simple linear regression analysis with data from the USGS Gulkana River at Sourdough gage (Gulkana R at Sourdough AK -15200280) or USGS Phelan Creek (Phelan C NR Paxson AK -15478040) gage data (USGS 2023a, USGS 2023b, Parks and Madison 1985).

Daily mean discharge data were estimated for all sites using linear regression analyses. The R-squared (or R2) values were determined for the estimated data. R-squared is the coefficient of determination. It is a statistical measure in a regression model that determines the proportion of variance in the dependent variable that can be explained by the independent variable. In other words, R-squared shows how well the data fit the regression model. R-squared values range from 0 to 1. The higher the R-squared value, the better a regression model fits a dataset.

The R-squared value for Gage Sites 1-4, using published data from the USGS Gulkana River at Sourdough stream gage, ranged from 0.81 to 0.91. For stream Gage Site 5, the R-squared values using published USGS gage data from Phelan Creek ranged from 0.77 to 0.97. Where daily mean discharge data was estimated for one of the five long-term stream gage sites using data from one or more of the other four BLM stream gage sites, R-squared values ranged from 0.91 to 0.98.

The BLM's Gulkana River at Paxson Lake Outlet (Sondergaard and Kostohrys 2018) was also used as a reference gage to fill data gaps as needed. In addition, air temperature and precipitation data from the Gulkana Airport, Paxson, and Sourdough climatological sites were used to help estimate these gaps in data. The Delta River above Garrett Creek (Gage Site 3) air temperature and precipitation data were reviewed to help estimate missing records and determine ice effect, but since routine quality assurance measures and inspections were not performed for these parameters, the use of this site data was cursory.

For the winter period (mid-October–April) when no gage readings are recorded, streamflow was computed from instantaneous winter under-ice discharge measurements by regressing discharge between measurements at each site. This method is based on the assumption that once ice and snow cover isolate the stream from precipitation and temperature changes, the flow to the stream recedes uniformly as the water table is lowered by reduction of water volume in the aquifer (Rogers and Armbruster 1990). Temperature and precipitation data from the Gulkana Airport, Sourdough, and Paxson climate sites were used to help determine when freeze-up and spring breakup occurred. Where no winter discharge measurements were made at the gage sites, flow values were estimated from a regression analysis with the USGS gage data at Sourdough and Phelan Creek.

For the BLM long-term gages, Gage Sites 1–5, the BLM's Glennallen Field Office Hydrologist is responsible for all aspects of the project including site selection, installation, maintenance, levels, data processing, database management, publication, web address links, and safety. The BLM-AK State Office Water Resources Lead, located in Anchorage, provides technical assistance and records review.

Results

The instantaneous discharge measurements and time series daily mean discharge values for the five BLM gage site locations are listed in Appendices A (Tables A1–A5) and B (Tables B1–B65). The monthly mean data, calculated from the daily flow values for the BLM sites, are listed in Tables 3–7 below. The peak and minimum recorded data, calculated from the daily flow values for the same sites, are listed in Tables 8–12 below. Hydrologically, BLM Gage Sites 1–4 (see map Figure 1 and Table 2 for location information) are characterized by low winter flow, large increases in flow during spring break-up, occasional summer peaks in response to rainfall, and a gradual decline during autumn, as shown by the concurrent data plot in the hydrograph (Figure 7). BLM Gage Site 5 is characterized by low winter flow, large increases in flow during spring breakup, continued large volume flows during the early summer months due to glacial melt, and a steady decline in flows in August through December. Hydrograph of concurrent streamflow data from Gage Site 3 and Gage Site 5 (Figure 8) illustrate the varied flow regimes of the upper Delta River Gage Sites 1–4 and the lower Gage Site 5, which includes the effects of inflow from glacial meltwater.

Flow-duration data are often used to statistically characterize streamflow. The exceedance probability, also referred to as the flow-duration percentile, is usually expressed as a percentage of a specified time interval (Risley and others 2008). For example, the 50% flow-duration value would be exceeded about half of the time (and is the same as the median value). For the Delta River gage sites, the monthly discharge values for the period of record at each site are used to determine at what percentile a certain discharge would be exceeded. The calculated flow-duration values for the five sites are listed in Tables 13–17.

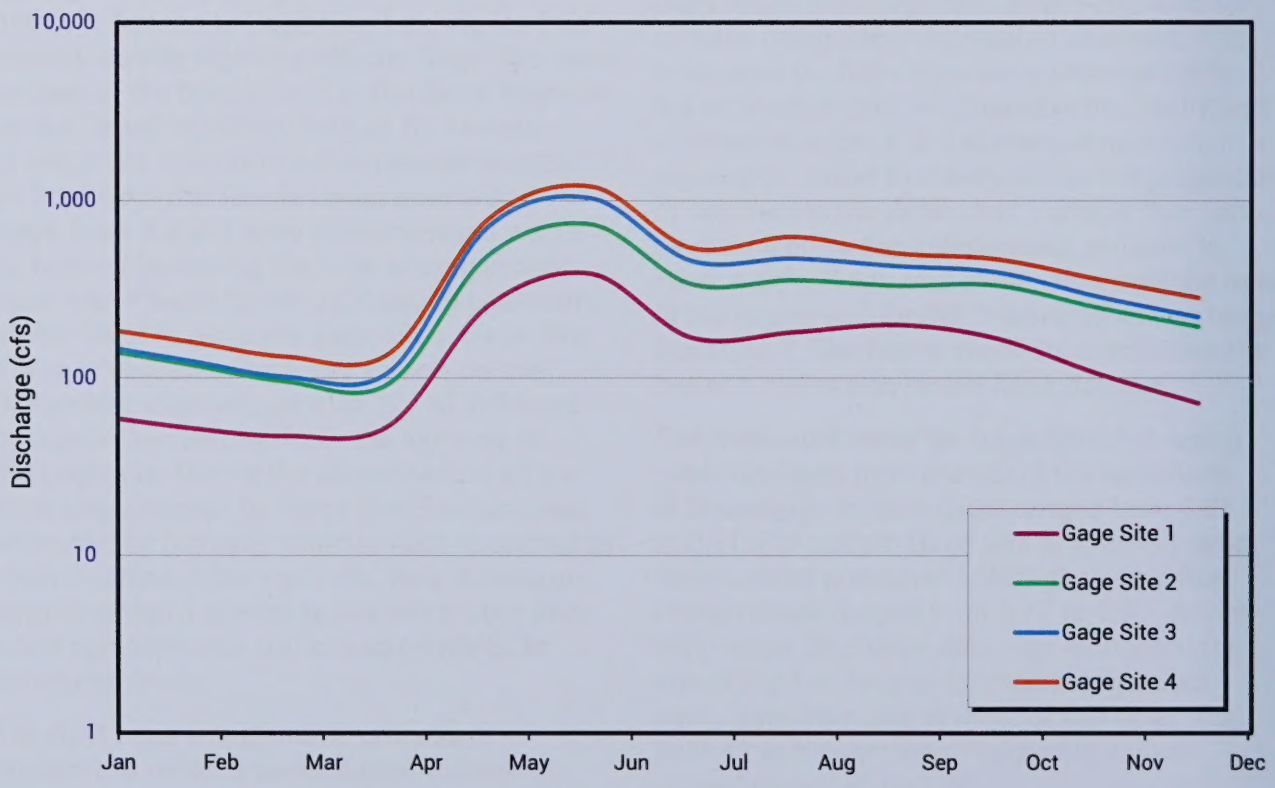

Figure 7. Monthly mean annual discharge hydrographs for BLM gage sites 1–4. This graph reflects concurrent computed data collected at these sites from January 2000 to March 2005.

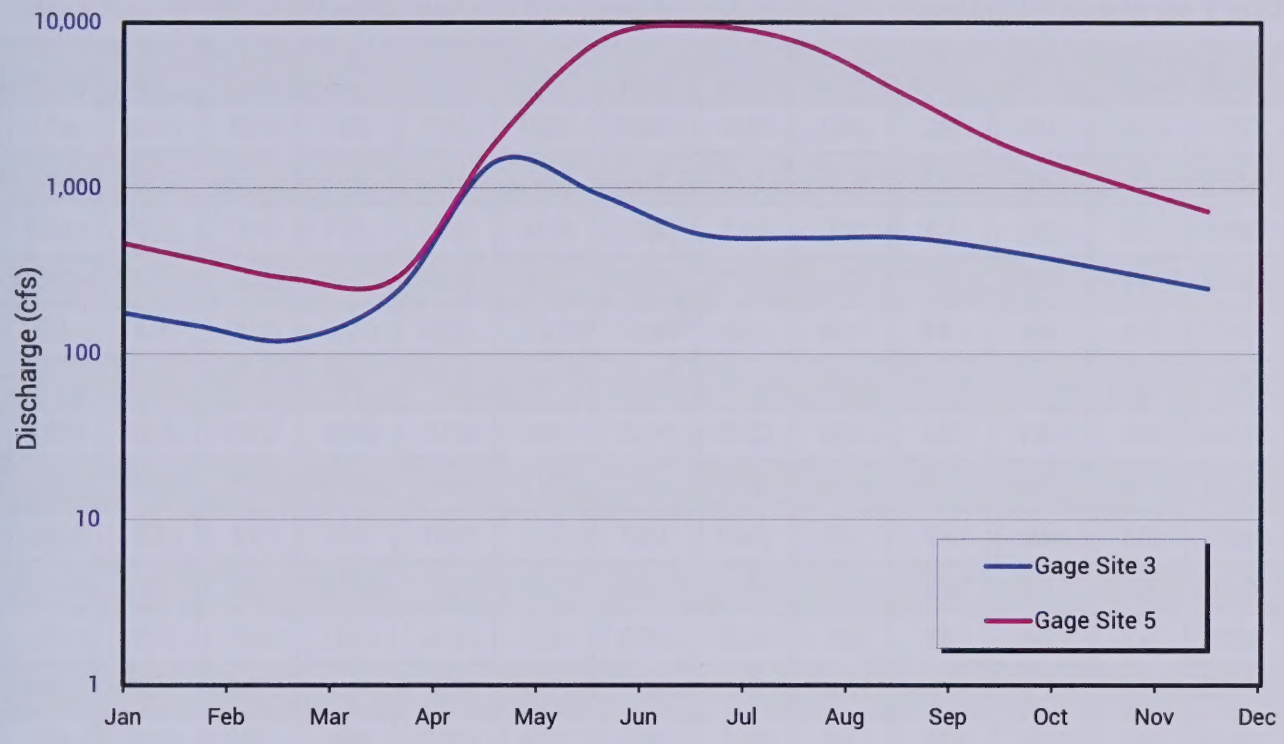

Figure 8. Monthly mean annual discharge hydrographs showing variation in flow regime for Gage Sites 3 and 5. This graph reflects concurrent computed data collected at these sites from January 2008 to December 2021.

Table 3. Monthly mean discharge (cfs) for Delta River at Denali Highway, Gage Site 1 (1993–2005).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1993	ND	ND	ND	ND	ND	200	169	192	201	171	149	131
1994	114	100	88	78	279	589	168	144	149	120	106	97
1995	89	81	74	71	241	341	224	169	251	147	123	110
1996	99	89	80	72	157	171	119	136	136	71	68	67
1997	65	64	63	188	664	442	181	316	145	109	95	83
1998	71	63	55	56	239	249	168	216	198	149	111	82
1999	61	46	34	38	279	413	178	217	152	129	116	104
2000	93	84	76	69	159	820	271	152	208	229	150	99
2001	65	49	42	75	349	297	202	151	127	98	76	59
2002	46	36	28	25	69	174	104	424	296	247	147	103
2003	73	64	57	61	232	359	186	174	192	131	79	66
2004	45	39	45	66	581	286	79	64	84	81	63	48
2005	37	30	31	37	491	415	174	118	290	213	113	60
Mean	**72**	**62**	**56**	**70**	**312**	**366**	**171**	**190**	**187**	**146**	**107**	**85**

ND–Not Determined (stream gage was first installed in June 1993 and prior flows for the year were not estimated).

Table 4. Monthly mean discharge (cfs) for Delta River at Long Tangle Lake, Gage Site 2 (2000–2005).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	125	102	83	71	296	1285	524	271	370	437	311	221
2001	157	113	81	104	496	829	403	326	251	199	157	123
2002	94	74	58	48	202	387	219	722	501	576	445	346
2003	267	209	163	141	568	664	362	334	390	273	176	151
2004	130	112	97	104	886	489	182	121	145	176	152	131
2005	113	98	85	86	920	737	367	271	544	420	233	129
Mean	**148**	**118**	**95**	**92**	**561**	**732**	**343**	**341**	**367**	**347**	**246**	**184**

Table 5. Monthly mean discharge (cfs) for Delta River above Garrett Creek, Gage Site 3 (2000–2022).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	145	116	93	78	337	1,565	803	362	480	507	353	245
2001	170	119	84	126	701	1,327	533	378	287	234	181	140
2002	102	79	61	49	255	457	258	1,021	677	705	531	401
2003	301	229	174	150	900	999	461	413	489	312	192	167
2004	145	126	110	129	1,439	769	225	170	193	231	196	166
2005	141	120	102	112	1,001	1,104	503	365	762	689	505	370
2006	270	200	148	119	747	895	573	1,524	687	675	516	394
2007	300	231	178	149	1,872	709	376	298	546	346	203	167
2008	136	112	101	141	1,319	566	702	592	682	431	363	288
2009	228	182	146	160	1,538	648	309	392	323	262	221	187
2010	158	134	114	144	499	525	588	367	323	228	193	164
2011	139	119	101	149	1,753	648	545	737	406	234	185	146
2012	115	92	74	302	1,296	956	473	431	610	425	281	185
2013	122	81	56	51	885	1,048	317	441	566	438	355	288
2014	232	189	155	680	1,682	1,180	887	486	573	419	335	269
2015	214	173	160	170	1,451	505	428	390	519	698	510	375
2016	274	203	157	302	1,871	925	547	655	626	508	365	263
2017	188	136	101	350	892	420	339	335	443	427	334	262
2018	204	161	128	163	1,922	1,784	512	936	578	516	375	272
2019	197	144	139	204	1,358	818	276	194	280	374	290	233
2020	187	152	123	132	2,201	1,767	887	522	581	465	349	262
2021	196	148	115	140	968	1,167	549	642	569	366	286	212
2022	156	122	121	128	3,506	2,847	906	1,095	1,750	1,062	753	534
Mean	**188**	**146**	**119**	**179**	**1,321**	**1,027**	**522**	**554**	**563**	**459**	**342**	**260**

Table 6. Monthly mean discharge (cfs) for Delta River above Eureka Creek, Gage Site 4 (1997–2005).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1997	ND	ND	ND	ND	ND	777	389	602	327	279	238	203
1998	172	148	127	128	584	595	461	518	528	302	217	116
1999	94	86	80	101	1,180	888	444	559	510	325	261	210
2000	168	135	109	92	425	1,907	906	378	558	639	484	359
2001	261	195	146	191	720	1,701	671	513	364	288	221	170
2002	130	101	78	64	272	473	299	1,463	698	773	599	464
2003	358	280	219	190	984	1,043	539	531	681	366	232	204
2004	178	156	137	155	1,565	861	279	223	209	247	214	185
2005	160	140	121	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	**190**	**155**	**127**	**132**	**819**	**1,031**	**499**	**598**	**484**	**402**	**308**	**239**

ND–Not Determined (stream gage was first installed in June 1997 and prior flows for the year were not estimated).

Table 7. Monthly mean discharge (cfs) for the BLM Delta River below Black Rapids, Gage Site 5 (2008–2021).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008	ND	ND	ND	ND	ND	6,238	8,610	5,894	3,879	2,228	1,397	876
2009	546	347	221	241	3,267	7,678	9,887	7,484	3,413	1,479	1,004	682
2010	461	317	218	221	2,958	6,799	9,762	8,465	4,553	1,263	924	676
2011	494	365	270	215	1,953	7,842	11,037	7,677	2,721	1,155	843	616
2012	447	328	241	202	266	8,943	8,828	6,499	4,774	2,443	1,511	934
2013	572	358	236	220	566	9,970	9,187	8,512	6,031	1,855	978	580
2014	502	450	405	396	971	6,268	8,889	6,671	3,545	1,433	817	589
2015	537	471	424	421	2,296	6,259	8,288	6,387	2,690	3,008	1,366	753
2016	592	462	388	398	3,289	8,286	10,651	9,492	4,016	1,834	1,149	688
2017	289	117	52	48	790	5,828	9,503	6,957	2,892	1,522	867	604
2018	436	319	234	203	490	8,021	9,603	9,450	2,591	1,704	1,024	653
2019	505	401	341	402	2,638	8,203	9,874	5,749	2,836	1,479	1,052	775
2020	590	454	351	479	3,431	9,400	9,435	7,112	3,441	2,108	1,405	945
2021	631	430	293	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mean	**508**	**371**	**283**	**287**	**1,910**	**7,672**	**9,504**	**7,412**	**3,645**	**1,809**	**1,103**	**721**

ND–Not Determined (stream gage was first installed in June 2008 and prior flows for the year were not estimated; in 2021, estimated flows ended after the winter measurement in March).

Table 8. Peak and minimum recorded discharge values (cfs) for Delta River at Denali Highway, Gage Site 1 (1993–2005).

Year	Peak Flow	Peak Date	Minimum Flow	Minimum Date
1993	ND	ND	ND	ND
1994	1,165	Jun 22	70	Apr 29
1995	569	Jun 27	67	Apr 21
1996	457	Jun 3	70	Apr 22
1997	1,297	Jun 6	62	Apr 16
1998	463	Aug 10	48	Apr 16
1999	809	Jun 8	30	Mar 30
2000	1,408	Jun 14	66	Apr 16–26
2001	588	May 25	41	Mar 13
2002	1,247	Aug 23	24	Apr 16
2003	646	Jun 1	54	Mar 27
2004	982	May 10	38	Feb 1
2005	608	Jun 7	29	Mar 31, Apr 3, Apr 5–11

ND–Not Determined (Partial Year)

Table 9. Peak and minimum recorded discharge values (cfs) for Delta River at Long Tangle Site, Gage Site 2 (2000–2005).

Year	Peak Flow	Peak Date	Minimum Flow	Minimum Date
2000	2,022	Jun 8	68	Apr 16–26
2001	1,559	Jun 7	65	Apr 4–5
2002	1,882	Aug 23	47	Apr 16–28
2003	1,154	Jun 7	120	Apr 22
2004	1,824	May 12	83	Apr 15–16
2005	1,534	May 17	71	Apr 21

Table 10. Peak and minimum recorded discharge values (cfs) for Delta River above Garrett Creek, Gage Site 3 (2000–2022).

Year	Peak Flow	Peak Date	Minimum Flow	Minimum Date
2000	2,203	Jun 8	76	Apr 17–27
2001	2,612	Jun 7	66	Apr 5
2002	2,519	Aug 23	47	Apr 17–29
2003	1,528	Jun 7	123	Apr 22
2004	3,100	May 12	95	Apr 16
2005	1,798	Jun 2	93	Apr 7, 9
2006	6,141	Aug 21	100	Apr 23
2007	3,793	May 9	140	Apr 12–26
2008	2,862	May 5	97	Apr 1–3
2009	3,915	May 5	115	Apr 16–17
2010	1,016	May 5	107	Mar 29–Apr 6
2011	3,063	May 23	88	Apr 11–12
2012	2,033	May 28	70	Mar 25–Apr 5
2013	3,881	May 28	50	Apr 1–25
2014	3,034	May 4	140	Mar 30–Apr 2
2015	2,988	May 14	160	Feb 26–Apr 19
2016	3,009	May 16	142	Mar 21–25
2017	1,346	May 2	94	Mar 21–31
2018	3,343	May 24	118	Mar 25–31
2019	2,577	May 9	120	Mar 3–10
2020	2,995	May 27	110	Mar 31–Apr 2
2021	2,176	Jun 7	109	Apr 5–9
2022	7,816	May 28	120	Feb 11–28

Table 11. Peak and minimum recorded discharge values (cfs) for Delta River above Eureka Creek, Gage Site 4 (1997–2005).

Year	Peak Flow	Peak Date	Minimum Flow	Minimum Date
1997	ND	ND	ND	ND
1998	1,085	May 26	108	Apr 15
1999	2,610	May 16	78	Mar 19–Apr 11
2000	3,084	Jun 8	89	Apr 16–26
2001	3,602	Jun 6	120	Apr 5
2002	4,246	Aug 23	62	Apr 16–28
2003	2,069	Jun 12	160	Apr 22
2004	3,156	May 10	120	Apr 15
2005	ND	ND	113	Mar 30–31

ND–Not Determined (partial year)

Table 12. Peak and minimum recorded discharge values (cfs) for Delta River below Black Rapids, Gage Site 5 (2008–2021).

Year	Peak Flow	Peak Date	Minimum Flow	Minimum Date
2008	13,282	Jul 28	ND	ND
2009	14,763	Aug 17	161	Apr 5–15
2010	14,181	Aug 5	156	Apr 11–16
2011	12,854	Jun 27	210	Apr 18–21
2012	15,327	Sep 20	200	Apr 3–27
2013	17,463	Jun 17–18	220	Mar 19–May 1
2014	13,672	Jul 11	396	Mar 19–May 2
2015	12,064	Jun 27	420	Mar 12–Apr 28
2016	15,018	Aug 8	385	Mar 8–Apr 20
2017	13,490	Aug 6	44	Mar 18–Apr 1
2018	21,307	Aug 6	191	Apr 29–May 1
2019	14,103	Jul 1	320	Mar 15
2020	12,845	Jun 16	319	Mar 26–Apr 9
2021	ND	ND	239	Mar 31

ND–Not Determined (partial year)

Table 13. Flow-duration percentile of monthly discharges (cfs) for Delta River at Denali Highway, Gage Site 1 (1993–2005).

Flow-duration Percentile	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0%	122	106	94	565	1,003	1,381	416	1,125	474	337	182	139
5%	112	99	87	114	727	822	305	409	327	264	158	127
10%	102	92	83	85	601	661	261	294	295	233	150	116
15%	97	87	78	79	552	548	233	248	278	207	144	111
20%	94	85	77	75	496	497	219	224	241	189	135	107
25%	91	83	75	73	459	462	208	214	215	176	127	104
30%	88	80	73	71	415	412	197	189	202	168	123	100
35%	79	66	63	70	377	389	188	180	195	161	119	98
40%	74	65	63	69	296	357	178	168	186	148	116	94
45%	70	64	58	66	259	327	167	160	177	136	111	89
50%	**69**	**63**	**56**	**63**	**242**	**298**	**158**	**154**	**169**	**132**	**107**	**85**
55%	67	61	54	60	229	279	152	150	159	129	103	81
60%	65	52	49	55	206	259	147	146	154	121	99	77
65%	65	49	44	53	190	242	143	142	149	114	93	70
70%	58	46	41	51	173	217	133	138	141	109	86	67
75%	54	40	40	49	151	196	126	132	135	104	80	66
80%	48	39	33	35	122	183	115	121	127	95	74	63
85%	43	38	32	30	104	171	104	110	120	89	68	58
90%	40	33	30	29	85	145	95	86	111	78	68	53
95%	38	30	29	25	46	126	80	65	86	71	65	48
100%	32	28	26	24	25	98	66	56	65	68	55	42
Mean	**72**	**62**	**56**	**70**	**312**	**366**	**171**	**190**	**187**	**146**	**107**	**85**

Table 14. Flow-duration percentile of monthly discharges (cfs) for the BLM Delta River at Long Tangle Lake, Gage Site 2 (2000–2005).

Flow-duration Percentile	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0%	302	233	185	257	1,838	2,022	844	1,809	827	671	501	390
5%	280	217	171	167	1,439	1,584	607	803	696	601	465	361
10%	259	203	159	142	1,078	1,273	504	577	604	556	431	335
15%	240	189	146	135	918	1,081	475	479	548	524	401	310
20%	172	123	101	128	820	991	456	395	525	505	341	244
25%	156	118	97	120	728	927	431	337	498	477	309	220
30%	141	114	94	104	688	894	412	310	456	447	289	198
35%	137	112	91	88	654	826	393	298	401	417	271	163
40%	134	109	90	85	625	771	367	282	364	400	243	157
45%	131	107	88	83	602	712	342	272	340	378	205	151
50%	**128**	**106**	**86**	**77**	**561**	**663**	**325**	**264**	**327**	**354**	**186**	**146**
55%	124	103	84	75	509	609	314	257	317	319	180	141
60%	121	101	83	74	448	547	302	251	303	220	174	137
65%	119	99	81	72	352	501	292	243	294	206	170	134
70%	116	98	79	71	263	477	276	238	275	198	165	131
75%	113	96	77	68	224	420	205	216	241	192	160	128
80%	108	93	73	68	149	381	200	187	230	188	157	125
85%	104	81	65	50	107	348	195	165	173	183	152	122
90%	97	76	60	48	81	322	172	118	153	178	148	116
95%	89	71	55	47	60	273	159	108	129	171	144	110
100%	**83**	**66**	**51**	**47**	**48**	**153**	**134**	**102**	**102**	**164**	**139**	**95**
Mean	**148**	**118**	**95**	**92**	**561**	**732**	**343**	**341**	**367**	**347**	**246**	**184**

Table 15. Flow-duration percentile of monthly discharges (cfs) for Delta River above Garrett Creek, Gage Site 3 (2000–2022).

Flow-duration Percentile	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0%	345	259	203	2,375	7,816	7,334	1,780	5,229	3,152	1,404	882	629
5%	304	228	172	430	2,954	2,197	1,016	1,280	1,069	803	586	445
10%	279	211	164	251	2,686	1,857	833	952	831	714	540	404
15%	255	198	160	216	2,282	1,560	749	799	752	652	497	371
20%	237	186	156	190	2,038	1,376	675	703	701	606	457	338
25%	224	177	148	176	1,787	1,249	622	644	654	564	398	303
30%	214	167	140	163	1,541	1,169	581	577	623	516	377	288
35%	205	160	131	153	1,362	1,055	537	523	592	485	363	278
40%	197	151	122	140	1,206	982	512	487	557	465	349	267
45%	187	143	121	134	1,137	880	484	459	526	449	336	257
50%	**177**	**136**	**117**	**127**	**1,066**	**811**	**460**	**418**	**503**	**434**	**325**	**246**
55%	168	130	111	122	1,003	753	438	390	480	416	314	236
60%	157	127	109	117	931	695	419	360	454	398	301	223
65%	150	123	104	112	829	642	397	347	431	365	273	202
70%	146	120	101	108	736	598	378	333	405	336	234	184
75%	142	118	98	101	611	562	352	310	373	281	209	175
80%	137	113	94	95	448	525	333	287	343	250	202	168
85%	132	106	83	81	341	471	294	267	295	239	195	161
90%	123	91	71	70	207	428	262	214	266	228	188	156
95%	108	81	60	50	99	360	223	187	201	217	181	146
100%	89	12	51	47	49	293	189	142	147	206	160	123
Mean	**188**	**146**	**119**	**179**	**1,321**	**1,027**	**522**	**554**	**563**	**459**	**342**	**260**

Table 16. Flow-duration percentile of monthly discharges (cfs) for Delta River above Eureka Creek, Gage Site 4 (1997–2005).

Flow-duration Percentile	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0%	405	312	247	337	3,156	3,299	1,910	4,074	1,381	873	674	524
5%	365	285	223	258	2,361	2,559	903	1,215	954	788	610	473
10%	329	259	201	209	1,559	1,948	800	873	791	724	555	427
15%	284	211	159	187	1,297	1,662	704	775	687	685	524	391
20%	251	189	145	177	1,207	1,523	633	665	637	616	467	346
25%	199	167	139	167	1,106	1,350	595	607	573	561	321	252
30%	184	158	135	155	1,044	1,212	552	581	527	424	266	217
35%	180	154	132	135	992	1,110	499	538	489	350	253	212
40%	176	150	130	126	892	993	470	512	469	326	248	208
45%	172	148	127	123	808	897	442	489	450	310	244	203
50%	**170**	**145**	**124**	**121**	**683**	**795**	**427**	**471**	**432**	**300**	**240**	**199**
55%	167	142	120	113	581	729	411	455	412	294	236	196
60%	163	139	118	109	498	654	398	424	399	289	233	193
65%	159	136	114	95	438	571	384	407	391	279	229	190
70%	155	131	107	93	396	547	372	377	364	273	225	187
75%	149	121	96	89	335	515	357	343	341	265	222	180
80%	134	104	82	82	251	493	332	333	315	261	218	173
85%	120	94	82	78	175	469	306	288	288	256	213	157
90%	98	87	78	64	115	446	275	239	258	252	207	125
95%	94	86	76	62	86	422	232	215	185	242	200	109
100%	90	82	69	62	64	353	164	154	171	230	153	100
Mean	**190**	**155**	**127**	**132**	**819**	**1,031**	**499**	**598**	**484**	**402**	**308**	**239**

Table 17. Flow-duration percentile of monthly discharges (cfs) for Delta River below Black Rapids, Gage Site 5 (2008–2021).

Flow-Duration Percentile	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0%	762	518	441	811	10,369	16,128	13,920	19,691	14,151	4,316	1,938	1,172
5%	664	493	420	483	6,571	11,810	12,070	11,576	6,797	2,885	1,660	1,033
10%	636	477	412	425	5,687	10,807	11,497	10,458	5,853	2,584	1,533	939
15%	608	465	396	420	4,919	9,968	11,148	9,878	5,015	2,383	1,420	873
20%	581	454	385	414	3,865	9,499	10,863	9,501	4,687	2,241	1,332	831
25%	565	445	372	396	2,851	9,185	10,623	9,103	4,401	2,128	1,268	799
30%	552	434	348	396	2,079	8,855	10,401	8,537	4,106	2,030	1,211	777
35%	540	424	333	385	1,473	8,629	10,192	7,953	3,774	1,944	1,170	756
40%	530	411	319	362	1,157	8,216	10,043	7,737	3,499	1,845	1,126	732
45%	522	398	286	267	939	7,833	9,869	7,491	3,270	1,765	1,074	713
50%	**513**	**381**	**270**	**220**	**754**	**7,591**	**9,657**	**7,183**	**3,113**	**1,689**	**1,039**	**695**
55%	504	369	261	220	611	7,290	9,394	6,843	2,949	1,590	1,005	678
60%	493	359	252	212	495	7,071	9,156	6,548	2,839	1,514	974	655
65%	482	347	243	209	432	6,787	8,893	6,287	2,730	1,451	946	633
70%	471	334	234	201	405	6,558	8,600	6,041	2,604	1,402	923	618
75%	456	323	224	200	339	6,113	8,399	5,732	2,490	1,347	895	603
80%	440	310	219	190	258	5,741	8,073	5,466	2,381	1,298	861	589
85%	421	296	207	167	248	5,317	7,692	5,062	2,261	1,247	828	576
90%	394	282	188	158	235	4,294	7,349	4,451	2,002	1,188	793	559
95%	325	131	54	48	222	3,308	6,607	3,482	1,762	1,113	742	539
100%	177	75	44	44	54	1,841	5,091	2,778	1,033	985	618	453
Mean	**508**	**371**	**283**	**287**	**1,910**	**7,672**	**9,504**	**7,412**	**3,645**	**1,809**	**1,103**	**721**

Discussion

Hydrographs of daily mean discharge for stream Gage Sites 1–5 are shown in Figures 7 and 8 for the calendar year, January–December. The hydrographs are characterized by long cold winters, generally from November to late April. With the exception of Gage Site 1 (which is ice free year-round), the stream surface forms ice and the land surface is snow covered, isolating both the stream and soils from precipitation. Under-ice stream discharge over the winter period gradually reduces and is driven by base flow. The winter period is followed by a 2–3-week spring breakup starting approximately the third week of April and ending approximately the second week of May. During this time period, increased air temperatures, increased solar exposure, accelerated snowmelt, and rain results in river ice melt and fracture; a very rapid increase in flows creates high water and sometimes flooding conditions. Starting in mid-May to the first week of June, peak flows at Gage Sites 1–4 occur. They are followed by a steady recession of flow due to warmer temperatures and drier climatic conditions, extending to mid-July. From August through the middle of October, the hydrograph is influenced by more frequent rainfall with a moderate increase in flows through August and early September and a slight decrease in flow going into October. For the glacially influenced Gage Site 5, peak flows extend from the spring breakup and continue to rise well into July because of high rates of glacial melt combined with precipitation. Flows begin to decrease when temperatures start cooling in early August and continue to gradually decline as fall and winter set in. It's worth noting that Gage Site 5 had several peak flows in August and September due to heavy rain and glacial melt, however, the hydrograph (Figure 8) still shows an overall gradual decline in August–September flows.

Recommendations

Stream Gage Site 3 is the only gage site currently in operation on the Delta River. Given the excellent correlation to Gage Sites 1, 2, and 4, Gage Site 3 should be continued as the index gage to characterize the upper (clearwater) section of the Delta WSRC. If future data are collected for stream Gage Sites 1-5 and/or other flow measurement locations within or relevant to the Delta Wild and Scenic River watershed, they should be periodically reported through future open file reports or alternative equivalent reporting and cross referenced to the electronic online version of this report. Stream gage data is also archived in the BLM AQUARIUS database system.

References

BLM (Bureau of Land Management). 1983. River management plan, Delta River, a component of the National Wild and Scenic Rivers System. U.S. Department of the Interior, Bureau of Land Manaement, Anchorage District, Alaska.

BLM (Bureau of Land Management). 2013. East Alaska Resource Management Plan Amendment Delta River Special Recreation Management Area. U.S. Department of the Interior, Bureau of Land Management, Glenallen Field Office, Glenallen, Alaska.

BLM (Bureau of Land Management), National Park Service, NPS Partnership Rivers, U.S. Fish and Wildlife Service, U.S. Forest Service, and River Management Society. 2024. Delta River, Alaska National Wild and Scenic Rivers System. Website. https://river.gov/rivers/delta.

Clark, M.H. 2005. Soil survey of the Delta River area, Alaska. U.S. Department of the Interior, Bureau of Land Management, Alaska State Office, Anchorage, Alaska.

Klein, J. 2013. Surface-water data manual for the statewide aquatic resources coordination unit. Special Publication Number 13-05. Alaska Department of Fish and Game, Division of Sport Fish, Anchorage, AK.

Melcher, N.B., and J.F. Walker. 1990. Evaluation of select methods for determining streamflow during periods of ice effect. Water-Supply Paper 2378. U.S. Department of the Interior, U.S. Geological Survey, Denver, CO.

Mueller, D.S., and C.R. Wagner. 2009. Measuring discharge with acoustic Doppler current profilers from a moving boat: Chapter 22 of book 3, section A. Techniques and Methods 3A–22. U.S. Department of the Interior, U.S. Geological Survey, Reston, VA. http://pubs.water.usgs.gov/tm3a22

Parks, B., and R.J. Madison. 1985. Estimation of selected flow and water-quality characteristics of Alaskan streams. Water-Resources Investigations Report 84-4247. U.S. Department of the Interior, U.S. Geological Survey, Anchorage, AK.

Rantz, S.E. and others. 1982. Measurement and computation of streamflow: Volume 1. Measurement of stage and discharge. Water-Supply Paper 2175. U.S. Department of the Interior, U.S. Geological Survey, Washington, DC.

Rantz, S.E. and others. 1982. Measurement and computation of streamflow: Volume 2. Computation of discharge. Water-Supply Paper 2175. U.S. Department of the Interior, U.S. Geological Survey, Washington, DC.

Risley, J., A. Stonewall, and T. Haluska. 2008. Estimating flow-duration and low-flow frequency statistics for unregulated streams in Oregon. Scientific Investigations Report 2008-5126. U.S. Department of the Interior, U.S. Geological Survey, Reston, VA.

Rogers, J. D., and J.T. Armbruster. 1990. Low flows and hydrologic droughts. In: Wolman, M. G. and, H.C. Riggs, ed., Surface water hydrology. The Geology of North America, Vol. O-1. Boulder, CO. The Geological Society of America.

Sondergaard, M., and J. Kostohrys. 2018. BLM stream gage data/Gulkana Wild and Scenic River. BLM-Alaska Open File Report #128. U.S. Department of the Interior, Bureau of Land Management, Anchorage, AK.

Turnipseed, D.P., and V.B. Sauer. 2010. Discharge measurements at gaging stations: Chapter 8 of book 3, section A. Techniques and Methods 3–A8. U.S. Department of the Interior, U.S. Geological Survey, Reston, VA.

USGS (U.S. Geological Survey). 2024. Gulkana R at Sourdough AK – 15200280. Website. U.S. Department of the Interior, U.S. Geological Survey. https://waterdata.usgs.gov/monitoring-location/15200280/#parameterCode=00065&period=P7D&showMedian=false

USGS (U.S. Geological Survey). 2024. Phelan C NR Paxson AK - 15478040. Website. U.S. Department of the Interior, U.S. Geological Survey. https://waterdata.usgs.gov/monitoring-location/15478040/#parameterCode=00065&period=P7D&showMedian=false

Van Haveren, B.P., W.L. Jackson, T. Martinez, B. Shelby and L. Carufel. 1987. Water rights assessment for Beaver Creek National Wild River, Alaska. U.S. Department of the Interior, Bureau of Land Management. Denver, CO.

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Appendix A. Instantaneous Discharge Measurements, Delta Wild and Scenic River

The following tables contain data for Delta Wild and Scenic River Gage Sites 1–5: Delta River at Denali Highway, Delta River at Long Tangle Lakes, Delta River above Garrett Creek, Delta River above Eureka Creek, and Delta River below Black Rapids. All streamflow data contained is from June 1993 through December 2022. Refer to Figure 1 and Table 2 in the report for gage site locations.

Table A1. Instantaneous Discharge Measurements for Delta River at Denali Highway, Gage Site 1 (1993–2005).

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
6/18/1993	1.70	184	65	60	3.07	0.9
10/6/1993	1.68	177	62	60	2.95	1.0
4/26/1994	ND	74	66	49	1.51	0.7
6/3/1994	2.42	653	93	185	3.53	2.0
8/5/1994	1.78	151	64	53	2.85	0.8
10/13/1994	1.33	117	71	55	2.13	0.8
4/21/1995	ND	67	77	53	1.26	0.7
6/22/1995	2.06	275	88	117	2.35	1.3
8/18/1995	1.70	170	89	82	2.07	0.9
9/14/1995	2.09	280	87	108	2.59	1.2
10/13/1995	1.55	139	80	74	1.88	0.9
4/22/1996	ND	70	77	51	1.37	0.7
6/7/1996	1.73	179	77	72	2.49	0.9
6/25/1996	1.49	112	70	52	2.15	0.7
8/19/1996	1.57	131	78	66	1.98	0.8
10/16/1996	1.40	69	74	46	1.50	0.6
4/16/1997	ND	62	59	40	1.55	0.7
5/14/1997	ND	239	82	102	2.34	1.2
5/28/1997	2.27	387	90	142	2.73	1.6
6/18/1997	1.74	227	84	91	2.49	1.1
7/25/1997	1.82	220	83	93	2.37	1.1
8/21/1997	1.85	226	88	105	2.15	1.2
10/2/1997	1.44	114	80	65	1.75	0.8
4/16/1998	ND	48	75	40	1.20	0.5
6/8/1998	2.24	335	88	122	2.75	1.4
6/23/1998	1.99	265	87	109	2.43	1.3
7/22/1998	1.71	178	74.5	71	2.51	1.0
8/12/1998	2.3	339	88	133	2.55	1.5
9/3/1998	1.88	208	84	95	2.19	1.1
10/2/1998	1.71	157	81	77	2.04	1.0
3/30/1999	ND	30	64	27	1.11	0.4

ND – Not Determined (data recorder not deployed during winter months)

Table A1. Continued

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
5/29/1999	2.28	355	90	129	2.75	1.44
6/22/1999	2.2	301	88	114	2.64	1.29
7/27/1999	2.23	306	87	113	2.71	1.30
8/25/1999	1.7	169	84	90	1.88	1.07
9/30/1999	1.53	136	80	72	1.89	0.90
4/12/2000	ND	69	73	45	1.53	0.62
5/23/2000	ND	192	83	89	2.16	1.08
6/7/2000	3.09	695	96	196	3.55	2.05
6/22/2000	2.55	454	93	154	2.95	1.66
7/26/2000	1.94	217	82	93	2.33	1.13
8/16/2000	1.58	138	79	68	2.03	0.86
9/26/2000	2.16	304	85	111	2.74	1.31
1/23/2001	ND	58	75	42	1.38	0.56
3/6/2001	ND	43	70	38	1.13	0.54
6/22/2001	2.14	289	88	118	2.45	1.34
7/5/2001	1.79	162	80	80	2.03	1.00
8/16/2001	1.54	111	78	62	1.79	0.79
9/26/2001	1.49	116	78	64	1.81	0.82
3/19/2002	ND	27	59	27	1.00	0.46
5/31/2002	2.29	336	91	123	2.73	1.35
6/18/2002	1.55	124	79	64	1.94	0.81
7/9/2002	1.53	116	77	60	1.93	0.78
8/8/2002	1.69	147	77	64	2.30	0.83
9/30/2002	2.32	345	90	129	2.67	1.43
10/30/2002	ND	177	85	85	2.08	1.01
1/16/2003	ND	71	75	49	1.45	0.65
3/11/2003	ND	58	71	47	1.23	0.66
4/23/2003	ND	49	82	69	0.71	0.84
5/23/2003	1.9	206	87	100	2.06	1.15
6/3/2003	2.78	506	97	182	2.78	1.88
7/14/2003	1.66	154	81	78	1.97	0.96

ND – Not Determined (data recorder not deployed during winter months)

Table A1. Continued

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
7/30/2003	2.28	295	90	125	2.36	1.39
9/24/2003	1.59	130	80	69	1.88	0.86
5/25/2004	2.96	623	96	190	3.28	1.98
6/9/2004	2.77	522	96	169	3.09	1.76
7/6/2004	1.49	98	78	62	1.58	0.79
8/11/2004	1.24	58	75	41	1.41	0.55
2/16/2005	ND	28	57	29	0.97	0.51
6/7/2005	2.91	608	97	186	3.27	1.93
8/8/2005	1.59	119	80	67	1.78	0.84
9/30/2005	2.05	282	88	106	2.66	1.20

ND – Not Determined (data recorder not deployed during winter months)

Table A2. Instantaneous Discharge Measurements for Delta River at Long Tangle Lake, Gage Site 2 (2000–2005).

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
6/15/1993*	ND	337	187	205	1.64	1.1
8/25/1999*	2.14	327	218	246	1.33	1.1
6/22/2000	3.11	853	199	318	2.68	1.6
8/10/2000	2.01	269	108	119	2.26	1.1
9/26/2000	2.64	563	165	217	2.59	1.3
5/27/2001	2.43	426	148	185	2.30	1.3
7/5/2001	2.31	358	143	165	2.17	1.2
8/8/2001	2.42	387	141	178	2.17	1.3
9/26/2001	2.02	240	129	134	1.79	1.0
5/29/2002	3.28	837	228	352	2.38	1.5
7/5/2002	2.28	310	238	265	1.17	1.1
8/8/2002	2.12	233	219	229	1.02	1.0
10/3/2002	2.80	600	199	251	2.39	1.3
6/10/2003	3.01	780	187	288	2.71	1.5
7/14/2003	2.21	290	215	210	1.38	1.0
7/30/2003	2.84	669	221	342	1.96	1.5
9/24/2003	2.40	295	211	238	1.24	1.1
6/9/2004	3.29	902	230	425	2.12	1.8
7/6/2004	1.90	205	106	114	1.80	1.1
8/11/2004	1.64	112	107	73	1.53	0.7
6/7/2005	3.34	1,020	198	352	2.90	1.8
8/8/2005	2.21	264	180	169	1.56	0.9
9/30/2005	2.67	537	211	267	2.01	1.3

*Instantaneous discharge measurement taken prior to deployment of data recorder and establishment of survey benchmarks
ND – Not Determined (data recorder not deployed at this time)

Table A3. Instantaneous Discharge Measurements for Delta River above Garrett Creek, Gage Site 3 (2000–2022).

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
8/26/1999*	4.12	407	89	166	2.45	1.87
7/5/2000	5.36	1,097	117	370	2.96	3.16
7/25/2000	4.56	617	103	189	3.26	1.83
8/14/2000	3.84	347	84	129	2.69	1.54
9/25/2000	4.68	688	103	203	3.39	1.97
4/5/2001	ND	66	22	27	2.44	1.23
6/25/2001	4.66	677	103	203	3.33	1.97
7/17/2001	4.17	458	95	155	2.95	1.63
8/15/2001	3.73	322	85	120	2.68	1.41
9/25/2001	3.58	280	83	115	2.43	1.39
6/20/2002	3.96	389	89	143	2.72	1.61
7/19/2002	3.34	217	77	96	2.26	1.25
8/7/2002	3.39	227	75	96	2.36	1.28
9/25/2002	5.00	830	106	243	3.42	2.29
6/2/2003	5.77	1,451	106	328	4.42	3.09
7/21/2003	3.78	349	86	126	2.77	1.47
7/31/2003	4.84	771	103	216	3.57	2.10
8/21/2003	3.77	344	84	126	2.73	1.50
9/29/2003	3.96	384	92	139	2.76	1.51
6/8/2004	5.52	1,192	106	291	4.10	2.75
6/23/2004	4.02	430	94	145	2.97	1.54
7/9/2004	3.44	229	78	102	2.25	1.31
8/12/2004	3.08	159	66	78	2.04	1.18
3/22/2005	ND	99	32	77	1.29	2.41
6/2/2005	6.15	1,774	108	366	4.85	3.39
7/19/2005	3.92	380	86	135	2.81	1.57
8/11/2005	3.63	308	84	118	2.61	1.40
9/29/2005	4.90	816	101	223	3.66	2.21
4/13/2006	ND	111	39	54	2.06	1.38
6/6/2006	4.61	703	101	197	3.57	1.95
9/28/2006	5.05	789	104	231	3.42	2.22
4/11/2007	ND	141	42	57	2.47	1.36
6/1/2007	5.21	1,137	103	273	4.16	2.65

*Instantaneous discharge measurement taken prior to deployment of data recorder and establishment of survey benchmarks
ND – Not Determined (ice cover)

Table A3. Continued.

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
7/6/2007	3.97	386	90	137	2.82	1.52
8/15/2007	3.76	292	83	120	2.43	1.45
7/9/2008	4.38	511	98	169	3.02	1.72
9/24/2008	4.74	701	83	244	2.87	2.94
6/19/2009	4.64	728	98	197	3.70	2.01
9/24/2009	3.65	296	83	111	2.67	1.34
6/11/2010	4.24	468	96	164	2.85	1.71
9/30/2010	3.48	235	78	115	2.04	1.47
6/3/2011	5.39	1,189	106	272	4.37	2.56
9/30/2011	3.48	264	85	128	2.06	1.51
3/19/2012	ND	71	33	37	1.92	1.14
6/5/2012	5.97	1,537	104	323	4.76	3.11
6/8/2012	6.52	1,116	87	402	2.78	4.62
7/26/2012	4.19	507	92	163	3.11	1.77
10/1/2012	4.28	528	97	171	3.09	1.77
3/15/2013	ND	55	44	35	1.57	0.80
6/13/2013	6.62	1,268	86	404	3.14	4.70
7/25/2013	3.79	290	77	164	1.77	2.13
9/27/2013	4.37	514	79	211	2.44	2.67
3/26/2014	ND	144	46	77	1.87	1.67
6/10/2014	5.23	1,094	83	276	3.96	3.33
7/2/2014	5.64	1,595	82	325	4.91	3.95
7/24/2014	4.41	654	81	223	2.93	2.74
8/13/2014	3.90	377	73	170	2.22	2.32
9/25/2014	4.15	487	73	190	2.56	2.62
2/25/2015	ND	160	75	99	1.62	1.32
6/4/2015	4.50	705	88	224	3.15	2.56
7/9/2015	4.07	469	73	184	2.55	2.53
9/24/2015	4.12	496	77	195	2.55	2.52
3/21/2016	ND	142	50	77	1.84	1.54
5/26/2016	5.66	1,735	108	355	4.89	3.29
7/27/2016	4.68	879	79	253	3.47	3.20
9/29/2016	4.30	607	77	219	2.77	2.84

ND – Not Determined (ice cover)

Table A3. Continued.

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
3/14/2017	ND	101	40	74	1.36	1.85
6/8/2017	4.07	516	79	200	2.58	2.54
6/29/2017	3.58	319	82	167	1.91	2.03
8/31/2017	4.11	549	78	209	2.63	2.69
9/26/2017	4.06	500	78	209	2.39	2.69
3/24/2018	ND	119	48	67	1.78	1.40
6/5/2018	6.36	2,366	85	378	6.26	4.45
7/10/2018	3.99	498	80	198	2.52	2.48
9/26/2018	4.31	645	80	218	2.96	2.73
3/1/2019	ND	123	68	57	2.16	0.84
6/6/2019	4.72	990	83	262	3.78	3.16
6/27/2019	4.03	552	79	204	2.71	2.58
8/22/2019	3.18	171	78	135	1.27	1.73
9/26/2019	3.84	413	80	187	2.21	2.34
3/20/2020	ND	119	51	95	1.25	1.86
6/5/2020	6.28	2,349	87	389	6.04	4.47
7/15/2020	4.68	981	83	258	3.80	3.11
8/21/2020	3.77	407	79	180	2.26	2.28
9/30/2020	4.04	539	83	206	2.62	2.48
3/18/2021	ND	110	57	81	1.36	1.42
6/2/2021	5.85	1,835	86	352	5.21	4.09
7/9/2021	4.23	625	78	214	2.92	2.74
6/8/2022	7.58	4,058	88	464	8.75	5.27
6/23/2022	4.87	1,100	83	275	4.00	3.31
7/27/2022	4.74	1,029	80	264	3.90	3.30
9/27/2022	5.13	1,309	84	297	4.41	3.54
3/23/2023	ND	178	66	80	2.23	1.21

ND – Not Determined (ice cover)

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Table A4. Instantaneous Discharge Measurements for Delta River above Eureka Creek, Gage Site 4 (1997–2005).

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
6/17/1993*	4.10	567	164	492	1.15	3.00
7/29/1997	3.42	364	103	419	0.87	4.07
8/21/1997	3.70	580	165	511	1.14	3.10
9/24/1997	2.78	313	160	373	0.84	2.33
4/15/1998	ND	108	124	321	0.34	2.59
6/25/1998	3.39	558	163	484	1.15	2.97
7/22/1998	3.50	480	158	484	0.99	3.06
8/19/1998	3.63	478	158	487	0.98	3.08
10/1/1998	3.64	476	158	471	1.01	2.98
08/03/1999	4.18	581	160	558	1.04	3.49
08/26/1999	3.85	524	160	498	1.05	3.11
09/29/1999	3.56	366	160	415	0.88	2.59
04/07/2000	ND	93	120	392	0.24	3.27
07/05/2000	8.12	1,058	99	539	1.96	5.44
07/25/2000	7.33	708	104	470	1.51	4.52
08/14/2000	6.66	385	99	418	0.92	4.22
09/25/2000	7.49	785	100	508	1.55	5.08
04/05/2001	ND	120	120	378	0.32	3.15
06/25/2001	7.77	871	100	555	1.57	5.55
07/17/2001	7.37	556	100	460	1.21	4.60
08/15/2001	7.12	365	99	443	0.82	4.47
09/25/2001	6.73	337	100	403	0.84	4.03
04/03/2002	ND	67	70	283	0.24	4.04
06/20/2002	6.44	488	99	382	1.28	3.86
07/19/2002	6.14	237	99	354	0.67	3.58
08/07/2002	6.54	271	99	386	0.70	3.90
09/25/2002	8.02	989	100	530	1.87	5.30
04/22/2003	ND	160	120	407	0.39	3.39
06/02/2003	8.54	1,563	100	606	2.58	6.06
07/21/2003	7.31	375	98	448	0.84	4.57

*Instantaneous discharge measurement taken prior to deployment of data recorder and establishment of survey benchmarks
ND – Not Determined (ice cover)

Table A4. Continued.

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
08/21/2003	7.50	417	99	484	0.86	4.89
09/29/2003	7.42	466	99	476	0.98	4.81
04/15/2004	ND	120	90	422	0.28	4.69
06/08/2004	8.55	1,291	100	599	2.16	5.99
07/09/2004	6.60	278	97	389	0.71	4.01
08/12/2004	6.64	182	98	385	0.47	3.93
03/22/2005	ND	118	96	362	0.33	3.77

ND – Not Determined (ice cover)

Table A5. Instantaneous Discharge Measurements for Delta River below Black Rapids, Gage Site 5 (2008–2021).

Date	Stage (ft)	Discharge (cfs)	Width (ft)	Area (sq ft)	Average Velocity (fps)	Average Depth (ft)
6/4/2008	5.94	3,163	143	576	5.49	4.03
9/23/2008	5.65	3,175	140	542	5.86	3.87
4/2/2009	ND	169	90	91	1.86	1.01
6/2/2009	6.88	5,679	150	821	6.92	5.47
9/24/2009	4.65	1,942	130	428	4.54	3.29
6/10/2010	7.11	6,360	157	855	7.44	5.45
10/1/2010	4.35	1,469	130	367	4.00	2.82
6/2/2011	8.70	10,845	186	1,252	8.66	6.73
9/29/2011	4.10	1,357	157	436	3.11	2.78
3/29/2012	ND	210	115	228	0.92	1.98
3/15/2013	ND	265	130	105	2.52	0.81
9/26/2013	5.37	2,897	149	515	5.63	3.46
3/28/2014	ND	385	93	142	2.71	1.53
10/1/2014	4.45	1,853	173	475	3.90	2.75
2/27/2015	ND	445	120	250	1.78	2.08
9/24/2015	4.32	1,753	148	446	3.93	3.01
3/8/2016	ND	385	120	164	2.35	1.37
9/29/2016	4.91	2,357	146	503	4.69	3.44
3/17/2017	ND	45	93	23	1.96	0.25
5/31/2017	4.44	1,870	123	414	4.52	3.37
6/30/2017	7.15	6,183	152	945	6.54	6.22
9/26/2017	5.00	2,654	136	542	4.90	3.99
3/16/2018	ND	233	130	111	2.10	0.85
2/27/2019	ND	363	100	124	2.93	1.24
5/16/2019	4.53	1,890	124	473	4.00	3.81
9/26/2019	4.29	1,764	115	402	4.39	3.50
3/26/2020	ND	319	100	115	2.77	1.15
5/15/2020	4.97	2,242	129	532	4.21	4.12
10/5/2020	4.94	2,395	126	518	4.62	4.11
3/16/2021	ND	291	85	138	2.11	1.62

ND – Not Determined (ice cover)

Appendix B. Daily Mean Discharge Values, Delta Wild and Scenic River

The following tables contain data for Delta Wild and Scenic River Gage Sites 1–5: Delta River at Denali Highway, Delta River at Long Tangle Lakes, Delta River above Garrett Creek, Delta River above Eureka Creek, and Delta River below Black Rapids. All continuous streamflow data contained is from June 1993 through December 2022. Refer to Figure 1 and Table 2 in the report for gage site locations. All data is listed in cubic feet per second (cfs).

Table B1. 1993 Delta River at Denali Highway daily mean discharge (cfs).

Day	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	252	179	152	301	205	158	139
2	243	179	150	282	190	158	138
3	231	175	152	214	182	157	138
4	223	172	155	195	178	156	137
5	219	182	159	175	177	155	137
6	212	203	161	172	177	155	136
7	206	198	163	172	176	154	135
8	199	188	163	166	175	153	135
9	196	179	159	173	175	153	134
10	188	175	160	177	174	152	134
11	186	174	164	195	173	152	133
12	182	196	165	237	172	151	133
13	183	183	166	245	172	150	132
14	174	179	166	233	171	150	131
15	171	177	166	216	170	149	131
16	162	172	173	202	170	148	130
17	177	166	188	205	169	148	130
18	184	154	186	196	168	147	129
19	182	149	183	200	167	146	129
20	177	155	185	213	167	146	128
21	175	162	216	207	166	145	127
22	172	158	235	194	165	144	127
23	184	158	250	184	164	144	126
24	200	156	240	177	164	143	126
25	214	155	231	174	163	143	125
26	221	149	222	172	162	142	125
27	237	149	209	176	162	141	124
28	233	146	217	183	161	141	124
29	216	146	248	190	160	140	123
30	196	146	276	202	160	140	123
31		150	294		159		122
MEAN	200	169	192	201	171	149	131
MAXIMUM	252	203	294	301	205	158	139
MINIMUM	162	146	150	166	159	140	122

Gage operated Jul 1–Oct 4. Estimated Jun 1–17, 19–30 (regression with USGS Sourdough 15200280). Oct 5–Dec 31 (measurements at gage).

Table B2. 1994 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	May	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	122	106	94	82	86	586	205	146	150	145	111	101
2	121	106	94	82	97	621	180	151	149	139	110	101
3	121	105	93	82	94	665	188	149	148	135	110	101
4	120	105	93	81	99	703	203	146	141	136	110	100
5	119	105	93	81	103	675	212	144	140	131	109	100
6	119	104	92	81	110	668	231	144	141	131	109	100
7	118	104	92	80	117	823	216	144	141	126	109	100
8	118	103	91	80	128	820	188	143	137	127	108	99
9	117	103	91	80	138	602	175	143	142	121	108	99
10	117	102	91	79	158	468	169	139	154	122	108	99
11	116	102	90	79	177	434	162	139	154	116	107	98
12	116	101	90	79	204	437	159	139	156	117	107	98
13	115	101	89	78	229	463	159	139	156	117	107	98
14	115	101	89	78	253	496	158	137	155	117	107	98
15	114	100	89	78	283	465	160	136	155	116	106	97
16	114	100	88	77	309	409	160	132	153	116	106	97
17	113	99	88	77	291	393	158	134	149	116	106	97
18	113	99	88	77	280	353	158	129	148	115	105	96
19	112	98	87	76	269	469	155	135	149	115	105	96
20	112	98	87	76	258	673	153	150	149	115	105	96
21	112	98	86	76	328	933	149	153	151	114	104	96
22	111	97	86	75	387	1,120	146	155	149	114	104	95
23	111	97	86	75	417	998	146	153	151	114	104	95
24	110	96	85	75	411	660	144	151	149	113	103	95
25	110	96	85	74	404	668	150	151	153	113	103	94
26	109	95	85	74	458	657	159	151	155	113	103	94
27	109	95	84	74	514	495	160	147	156	112	103	94
28	108	95	84	73	468	385	156	146	153	112	102	94
29	108		84	70	496	291	151	146	149	112	102	93
30	107		83	79	519	239	145	144	150	111	102	93
31	107		83		549		143	145		111		93
MEAN	114	100	88	78	279	589	168	144	149	120	106	97
MAXIMUM	122	106	94	82	549	1,120	231	155	156	145	111	101
MINIMUM	107	95	83	70	86	239	144	129	137	111	102	93

Gage operated Jun 3–Oct 13. Estimated Jan 1–Apr 28, Oct 14–Dec 31 (measurements at gage), Apr 19–Jun 2, Sep 30–Oct 12 (regression with USGS Phelan Creek 15478040).

Table B3. 1995 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	93	84	78	71	104	259	342	218	321	196	129	116
2	92	84	78	71	120	257	313	212	325	190	129	116
3	92	84	77	71	133	255	287	210	318	184	128	115
4	92	84	77	70	150	259	266	221	311	175	128	115
5	91	83	77	70	175	269	260	215	306	170	127	114
6	91	83	77	70	199	262	247	206	314	168	127	114
7	91	83	76	70	238	265	232	189	319	163	126	114
8	91	83	76	70	287	285	219	177	303	161	126	113
9	90	83	76	69	352	272	214	166	281	156	125	113
10	90	82	76	69	444	308	209	156	274	152	125	112
11	90	82	76	69	456	397	214	154	282	147	125	112
12	90	82	75	69	434	470	211	157	295	146	124	112
13	89	82	75	69	376	398	222	162	288	138	124	111
14	89	81	75	68	297	356	259	179	274	138	123	111
15	89	81	75	68	238	324	261	178	248	137	123	110
16	89	81	74	68	197	298	237	170	248	137	122	110
17	88	81	74	68	189	289	218	165	230	136	122	110
18	88	80	74	68	187	281	208	156	220	136	122	109
19	88	80	74	67	190	287	198	149	212	135	121	109
20	88	80	74	67	192	309	188	145	199	135	121	109
21	87	80	73	67	197	287	184	142	201	134	120	108
22	87	79	73	67	202	267	194	139	191	134	120	108
23	87	79	73	67	207	336	196	145	186	133	119	107
24	86	79	73	73	214	411	198	145	192	133	119	107
25	86	79	73	73	226	486	201	140	199	132	119	107
26	86	79	72	73	235	507	197	131	211	132	118	106
27	86	78	72	73	238	558	188	126	205	131	118	106
28	85	78	72	85	244	509	189	121	200	131	117	105
29	85		72	85	247	399	181	126	195	130	117	105
30	85		71	95	254	372	195	179	193	130	116	105
31	85		71		259		217	253		129		104
MEAN	89	81	74	71	241	341	224	169	251	147	123	110
MAXIMUM	93	84	78	95	456	558	342	253	325	196	129	116
MINIMUM	85	78	71	67	104	255	181	121	186	129	116	105

Gage operated Jun 22–Oct 13. Estimated Jan 1–Apr 22, Oct 14–Dec 31 (measurements at gage), April 23–Jun 21 (regression with USGS Phelan Creek 15478040).

Table B4. 1996 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	104	93	84	75	70	377	114	114	206	95	68	67
2	104	93	84	75	70	395	107	109	243	86	68	67
3	104	93	84	75	85	401	101	107	241	77	68	67
4	103	92	83	75	85	308	103	104	212	74	68	67
5	103	92	83	74	85	226	100	111	183	74	68	67
6	103	92	83	74	98	184	99	112	168	72	68	67
7	102	92	83	74	122	174	98	113	154	72	68	67
8	102	91	82	74	121	159	106	124	143	72	68	67
9	102	91	82	73	163	159	104	129	130	71	68	67
10	101	91	82	73	205	154	108	132	124	71	68	67
11	101	90	81	73	241	140	110	146	124	71	68	67
12	100	90	81	73	242	145	113	180	132	71	68	67
13	100	90	81	72	235	145	112	172	127	70	68	67
14	100	89	80	72	190	140	138	181	123	69	68	67
15	99	89	80	72	137	145	153	170	122	69	68	67
16	99	89	80	72	124	145	156	160	121	69	68	67
17	99	88	80	71	113	140	150	157	118	69	68	67
18	98	88	79	71	103	135	142	144	114	69	68	66
19	98	88	79	71	92	131	133	133	105	69	68	66
20	98	87	79	71	90	131	131	121	108	69	68	66
21	97	87	78	70	97	126	127	123	109	69	68	66
22	97	87	78	70	130	126	133	125	110	69	68	66
23	97	86	78	70	205	126	129	132	109	69	67	66
24	96	86	78	70	242	122	123	139	110	69	67	66
25	96	86	77	70	233	118	118	142	111	69	67	66
26	96	86	77	70	212	121	111	132	112	69	67	66
27	95	85	77	70	176	118	112	129	111	69	67	66
28	95	85	77	70	160	111	108	132	107	69	67	66
29	95		76	70	193	113	104	132	100	68	67	66
30	94		76	70	245	110	112	145	98	68	67	66
31	94		76		315		124	170		68		66
MEAN	99	89	80	72	157	171	119	136	136	71	68	67
MAXIMUM	104	93	84	75	315	401	156	181	243	95	68	67
MINIMUM	94	85	76	70	70	110	98	104	98	68	67	66

Gage operated Jun 7–Oct 16. Estimated Jan 1-Apr 30, Oct 17-Dec 31 (measurements at gage), MAY 1-Jun 6 (regression with USGS Phelan Creek 15478040).

Table B5. 1997 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	66	65	64	63	601	633	158	732	195	119	101	89
2	66	65	64	63	667	534	152	647	186	116	101	88
3	66	65	64	62	699	496	146	461	178	116	101	88
4	66	65	64	62	732	573	146	349	169	115	100	87
5	66	65	64	62	766	998	147	281	166	115	100	87
6	66	65	64	62	732	1,237	147	245	163	114	99	87
7	66	65	63	62	699	1,157	139	234	160	114	99	86
8	66	64	63	62	686	907	133	226	161	113	98	86
9	66	64	63	62	660	719	127	213	159	112	98	85
10	66	64	63	62	644	593	128	204	157	112	97	85
11	66	64	63	62	583	498	123	198	150	111	97	85
12	66	64	63	62	634	432	125	216	148	111	97	84
13	65	64	63	62	713	396	133	401	145	110	96	84
14	65	64	63	62	970	363	154	630	141	110	96	84
15	65	64	63	62	1,003	325	182	546	140	109	95	83
16	65	64	63	62	917	290	197	434	136	109	95	83
17	65	64	63	98	805	255	200	383	133	109	94	82
18	65	64	63	134	695	233	191	338	133	108	94	82
19	65	64	63	170	660	217	181	297	135	108	94	82
20	65	64	63	206	616	227	177	263	133	107	93	81
21	65	64	63	242	595	255	195	237	132	107	93	81
22	65	64	63	278	600	251	254	234	133	106	92	81
23	65	64	63	314	601	246	285	231	132	106	92	80
24	65	64	63	350	571	242	264	214	130	105	91	80
25	65	64	63	386	505	232	238	215	127	105	91	80
26	65	64	63	421	460	215	215	219	124	104	91	79
27	65	64	63	457	431	198	195	238	122	104	90	79
28	65	64	63	493	425	191	177	248	123	103	90	78
29	65		63	529	490	180	169	238	123	103	89	78
30	65		63	565	696	167	199	218	122	102	89	78
31	65		63		722		331	206		102		77
MEAN	65	64	63	188	664	442	181	316	145	109	95	83
MAXIMUM	66	65	64	565	1,003	1,237	331	732	195	119	101	89
MINIMUM	65	64	63	62	425	167	123	198	122	102	89	77

Gage operated May 28–Oct 2. Estimated Jan 1–Apr 16, Oct 3–Dec 31 (measurements at gage), Apr 17–May 27 (regression with USGS Sourdough 15200280).

Table B6. 1998 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	76	67	59	51	112	384	138	161	226	177	127	95
2	76	66	59	51	102	361	132	149	215	173	126	94
3	76	66	58	51	118	329	126	140	211	168	125	93
4	75	66	58	51	135	359	119	138	202	167	123	92
5	75	65	58	50	168	348	113	135	188	165	122	91
6	75	65	58	50	197	358	114	141	178	164	121	91
7	74	65	57	50	188	351	127	180	176	162	120	90
8	74	65	57	50	188	339	138	245	172	160	119	89
9	74	64	57	50	183	341	147	335	168	159	118	88
10	73	64	57	49	169	302	144	447	161	157	116	87
11	73	64	56	49	168	251	143	423	156	156	115	86
12	73	63	56	49	172	213	151	364	155	154	114	85
13	72	63	56	49	175	190	153	289	155	153	113	85
14	72	63	56	48	180	170	148	250	164	151	112	84
15	72	63	55	48	185	163	145	215	169	150	111	83
16	71	62	55	48	205	178	144	194	177	148	110	82
17	71	62	55	49	221	203	161	215	183	147	109	81
18	71	62	55	50	228	202	215	208	185	146	108	81
19	70	61	54	51	240	187	242	196	183	144	107	80
20	70	61	54	51	244	174	233	181	189	143	106	79
21	70	61	54	53	238	188	211	172	202	141	105	78
22	70	61	54	55	235	258	190	173	206	140	104	78
23	69	60	53	56	265	283	181	179	215	139	103	77
24	69	60	53	58	285	258	180	187	236	137	102	76
25	69	60	53	60	402	226	185	187	267	136	101	75
26	68	60	53	63	414	207	200	185	278	135	100	75
27	68	59	52	68	411	185	219	184	262	133	99	74
28	68	59	52	77	398	165	224	189	242	132	98	73
29	67		52	85	410	152	212	197	219	131	97	72
30	67		52	102	400	143	192	219	189	130	96	72
31	67		52		382		174	233		128		71
MEAN	71	63	55	56	239	249	168	216	198	149	111	82
MAXIMUM	76	67	59	102	414	384	242	447	278	177	127	95
MINIMUM	67	59	52	48	102	143	113	135	155	128	96	71

Gage operated June 8–Oct 2. Estimated Jan 1–Apr 16, Oct 3–Dec 31 (measurements at gage), Apr 17–Jun 7, Aug 13–Sep 2 (regression with USGS Sourdough 15200280).

Table B7. 1999 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	70	52	40	30	77	320	205	349	165	136	122	110
2	70	52	39	30	84	384	178	295	167	135	121	109
3	69	51	39	30	90	449	157	249	171	135	121	109
4	68	51	39	30	104	505	144	215	181	134	120	108
5	68	50	38	30	117	543	136	188	193	134	120	108
6	67	50	38	30	126	642	130	168	187	133	120	108
7	66	49	37	30	143	745	127	157	177	133	119	107
8	66	49	37	30	154	797	126	156	168	132	119	107
9	65	48	37	30	176	752	124	157	160	132	118	107
10	65	48	36	30	198	602	121	158	155	131	118	106
11	64	47	36	30	229	498	118	154	149	131	118	106
12	63	47	36	31	260	426	121	154	144	130	117	105
13	63	46	35	31	294	387	122	197	138	130	117	105
14	62	46	35	31	411	377	120	244	135	130	116	105
15	61	46	35	31	521	353	115	280	137	129	116	104
16	61	45	34	31	551	324	116	329	146	129	115	104
17	60	45	34	31	545	358	128	333	155	128	115	104
18	60	44	34	33	529	548	144	296	157	128	115	103
19	59	44	33	34	440	492	149	256	154	127	114	103
20	59	43	33	37	354	392	145	226	150	127	114	103
21	58	43	33	38	301	342	147	213	145	126	113	102
22	57	43	32	41	269	294	170	201	143	126	113	102
23	57	42	32	43	251	246	175	188	142	126	113	102
24	56	42	32	45	242	215	173	180	138	125	112	101
25	56	41	31	48	249	196	184	186	137	125	112	101
26	55	41	31	51	266	207	233	220	132	124	112	100
27	55	41	31	57	343	256	310	223	130	124	111	100
28	54	40	31	59	385	264	350	212	132	123	111	100
29	54		30	65	349	256	334	198	134	123	110	99
30	53		30	70	306	230	334	181	136	123	110	99
31	53		30		274		373	170		122		99
MEAN	61	46	34	38	279	413	178	217	152	129	116	104
MAXIMUM	70	52	40	70	551	797	373	349	193	136	122	110
MINIMUM	53	40	30	30	77	196	115	154	130	122	110	99

Gage operated May 29–Sep 30. Estimated Jan 1–Mar 29, Oct 1–Dec 31 (measurements at gage), Mar 31–May 28, Aug 26–Sep 29 (regression with USGS Sourdough 15200280).

Table B8. 2000 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	98	88	80	72	72	801	416	178	186	279	182	120
2	98	88	80	71	72	758	358	167	185	275	180	119
3	98	88	79	71	74	710	318	165	187	272	177	117
4	97	87	79	71	75	689	300	161	201	268	175	116
5	97	87	79	71	77	705	300	158	203	264	172	114
6	97	87	78	70	79	723	343	157	194	261	170	112
7	96	87	78	70	81	760	327	157	185	257	168	111
8	96	86	78	70	82	932	291	157	179	253	165	109
9	96	86	78	70	86	1,117	264	150	177	250	163	108
10	95	86	77	69	90	1,161	245	144	173	247	161	106
11	95	85	77	69	94	1,235	229	140	176	243	159	105
12	95	85	77	69	98	1,371	219	138	187	240	156	103
13	94	85	77	69	101	1,381	216	136	200	237	154	102
14	94	84	76	69	106	1,364	238	140	204	233	152	101
15	94	84	76	69	110	1,267	258	142	200	230	150	99
16	93	84	76	66	113	1,154	250	141	190	227	148	98
17	93	84	76	66	118	1,026	265	142	183	224	146	97
18	93	83	75	66	127	972	323	144	175	221	144	95
19	92	83	75	66	135	858	351	145	168	218	142	94
20	92	83	75	66	144	697	325	148	160	215	140	93
21	92	82	74	66	152	555	289	148	157	212	138	91
22	91	82	74	66	159	460	267	148	176	209	136	90
23	91	82	74	66	167	470	259	148	217	206	134	89
24	91	82	74	66	174	526	254	148	250	203	133	88
25	91	81	73	66	172	515	239	152	272	200	131	86
26	90	81	73	66	179	468	221	152	295	198	129	85
27	90	81	73	69	206	451	227	151	295	195	127	84
28	90	80	73	69	231	484	219	154	291	192	125	83
29	89	80	72	72	250	514	211	151	287	190	124	82
30	89		72	72	467	478	198	176	283	187	122	81
31	89		72		842		185	187		185		80
MEAN	93	84	76	69	159	820	271	152	208	229	150	99
MAXIMUM	98	88	80	72	842	1,381	416	187	295	279	182	120
MINIMUM	89	80	72	66	72	451	185	136	157	185	122	80

Gage operated Jun 7–Sep 26. Estimated Jan 1–Apr 11, Sep 27–Dec 31 (measurements at gage), Apr 13–Jun 6, Jul 31–Aug 15 (regression with USGS Sourdough 15200280).

Table B9. 2001 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	79	54	45	45	138	444	162	321	112	111	86	67
2	77	54	44	48	139	433	157	319	112	110	85	66
3	76	54	44	48	151	425	149	274	115	109	84	66
4	75	53	44	48	151	402	140	255	116	108	84	65
5	74	53	43	50	163	380	150	239	129	108	83	65
6	73	52	43	52	175	355	199	215	158	107	82	64
7	72	52	43	55	187	345	220	189	168	106	82	63
8	71	52	43	55	199	346	221	168	164	105	81	63
9	70	51	43	57	211	345	226	153	154	104	80	62
10	69	51	43	57	224	327	229	142	144	103	80	62
11	68	51	43	59	236	313	222	132	136	102	79	61
12	67	50	43	62	237	303	221	124	131	101	78	61
13	67	50	41	64	246	298	218	119	130	101	78	60
14	66	50	41	64	276	302	207	114	130	100	77	60
15	65	49	41	70	332	298	198	111	126	99	76	59
16	64	49	41	70	406	289	186	110	124	98	76	59
17	63	49	41	76	439	281	172	109	121	97	75	58
18	62	48	41	76	465	271	159	111	116	96	74	58
19	61	48	41	82	483	267	148	110	116	96	74	57
20	60	48	41	82	493	269	148	109	120	95	73	57
21	60	47	41	88	480	280	189	104	124	94	73	56
22	59	47	41	88	454	279	307	104	123	93	72	56
23	58	47	41	94	443	266	312	106	124	93	71	55
24	58	46	41	95	502	248	266	115	122	92	71	55
25	57	46	41	101	588	227	225	120	119	91	70	55
26	57	46	41	107	574	201	209	119	116	90	70	54
27	56	45	41	107	523	192	201	120	115	89	69	54
28	56	45	43	114	495	182	195	121	114	89	68	53
29	56		43	120	493	180	192	121	113	88	68	53
30	55		45	126	478	169	191	119	112	87	67	52
31	55		45		454		246	116		87		52
MEAN	65	49	42	75	349	297	202	151	127	98	76	59
MAXIMUM	79	54	45	126	588	444	312	321	168	111	86	67
MINIMUM	55	45	41	45	138	169	140	104	112	87	67	52

Gage operated Jun 22–Sep 26. Estimated Jan 1–Mar 5, Sep 27–Dec 31 (measurements at gage), Mar 7–Jun 21, (regression with USGS Sourdough 15200280).

Table B10. 2002 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	51	40	31	26	25	309	118	90	289	337	173	122
2	51	39	31	26	25	305	138	85	278	330	171	120
3	51	39	31	26	25	281	140	82	258	323	169	119
4	50	39	31	26	25	246	140	80	237	316	167	117
5	50	38	30	26	25	217	136	78	219	309	165	116
6	49	38	30	25	25	208	133	81	238	302	163	115
7	49	38	30	25	26	196	129	100	329	295	161	113
8	49	37	30	25	27	183	122	140	408	289	159	112
9	48	37	29	25	28	183	115	266	416	282	157	111
10	48	37	29	25	29	167	108	382	374	276	156	110
11	47	37	29	25	30	163	103	481	334	270	154	108
12	47	36	29	25	31	179	103	847	317	264	152	107
13	47	36	28	25	31	186	103	1,082	313	258	150	106
14	46	36	28	25	32	172	100	841	303	253	148	104
15	46	35	28	25	33	156	96	567	282	247	147	103
16	45	35	28	24	34	145	90	410	259	242	145	102
17	45	35	27	24	36	136	87	320	240	236	143	101
18	45	34	27	24	39	128	87	267	227	231	142	100
19	44	34	27	24	43	131	87	248	215	226	140	99
20	44	34	27	24	48	160	85	280	201	221	138	97
21	44	34	27	24	53	180	83	540	203	216	137	96
22	43	33	27	24	58	171	80	1,100	199	211	135	95
23	43	33	27	24	65	155	80	1,125	191	207	134	94
24	42	33	27	24	78	139	81	850	187	202	132	93
25	42	32	27	24	104	133	87	650	248	198	131	92
26	42	32	26	24	119	132	92	511	377	193	129	91
27	41	32	26	24	140	126	99	415	461	189	128	90
28	41	32	26	24	161	119	105	350	474	185	126	89
29	41		26	25	181	114	104	306	419	181	125	88
30	40		26	25	250	110	101	278	370	177	123	87
31	40		26		319		95	280		175		86
MEAN	46	36	28	25	69	174	104	424	296	247	147	103
MAXIMUM	51	40	31	26	319	309	140	1,125	474	337	173	122
MINIMUM	40	32	26	24	25	110	80	78	187	175	123	86

Gage operated May 31–Sep 30. Estimated Jan 1–Mar 18, Oct 1–Dec 31 (measurements at gage), Mar 20–May 30, (regression with USGS Sourdough 15200280).

Table B11. 2003 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	85	67	60	54	109	628	169	319	274	189	87	71
2	84	67	60	53	118	610	176	294	288	190	87	71
3	83	66	60	53	130	504	228	256	288	189	86	71
4	82	66	60	53	142	457	277	224	295	181	86	70
5	81	66	59	53	154	469	264	201	291	177	86	70
6	80	66	59	53	170	555	231	183	268	173	86	70
7	79	65	59	53	182	620	206	168	247	170	86	70
8	78	65	59	53	202	527	188	152	229	165	84	70
9	77	65	58	53	214	415	178	144	218	164	84	70
10	76	65	58	53	217	378	166	136	208	166	84	70
11	75	64	58	53	217	384	159	130	198	161	83	70
12	74	64	58	53	225	418	160	132	190	150	83	70
13	74	64	58	53	236	408	154	137	189	148	82	68
14	73	64	57	53	251	348	147	142	180	143	80	68
15	72	63	57	53	243	298	140	147	177	131	78	68
16	71	63	57	54	232	274	142	151	172	119	78	67
17	71	63	57	54	233	248	155	151	160	110	76	67
18	70	63	57	55	272	236	157	150	136	104	76	66
19	70	63	56	55	276	246	146	150	140	102	76	66
20	70	62	56	56	252	261	137	148	144	100	76	66
21	70	62	56	57	228	291	133	146	147	98	74	64
22	69	62	56	61	214	305	130	142	141	97	74	64
23	69	62	55	64	204	300	138	140	140	95	74	63
24	69	61	55	69	214	290	141	137	135	95	74	63
25	69	61	55	73	225	277	139	140	139	94	73	61
26	68	61	55	78	241	251	140	147	143	94	73	61
27	68	61	54	84	262	226	167	180	146	94	73	60
28	68	60	54	91	267	200	248	215	148	94	73	60
29	68		54	95	308	185	305	216	154	92	71	59
30	67		54	101	400	175	312	204	170	90	71	59
31	67		54		554		320	226		89		57
MEAN	73	64	57	61	232	359	186	174	192	131	79	66
MAXIMUM	85	67	60	101	554	628	320	319	295	190	87	71
MINIMUM	67	60	54	53	109	175	130	130	135	89	71	57

Gage operated May 23–Sep 24. Estimated Jan 1–Mar 10 (measurements at gage), Mar 12–May 22, Sep 25–Dec 31 (regression with USGS Sourdough 15200280).

Table B12. 2004 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	56	38	40	52	169	441	95	74	86	92	71	55
2	56	38	40	52	210	493	95	69	89	92	70	54
3	55	38	40	52	309	523	94	68	86	91	69	54
4	53	38	40	52	408	497	92	67	84	90	69	53
5	52	38	40	52	538	453	92	65	86	89	68	53
6	50	38	40	52	775	408	97	63	82	88	68	52
7	50	38	40	52	823	393	101	62	81	88	67	52
8	49	38	40	52	924	478	96	61	79	87	67	51
9	49	38	40	52	954	532	91	60	77	86	66	51
10	48	38	40	52	982	490	89	58	75	85	65	50
11	48	39	42	52	861	435	86	58	75	85	65	50
12	46	39	43	53	774	388	81	58	74	84	64	50
13	46	39	45	53	755	342	77	59	71	83	64	49
14	45	39	46	53	711	302	74	58	75	83	63	49
15	45	39	46	53	671	262	72	56	74	82	63	48
16	43	39	46	54	637	227	70	57	71	81	62	48
17	43	39	46	55	598	205	69	58	65	80	62	47
18	43	39	46	56	560	188	68	56	65	80	61	47
19	42	39	46	57	508	175	67	56	70	79	60	47
20	42	39	46	59	480	162	70	58	76	78	60	46
21	42	39	46	60	442	151	72	57	82	78	59	46
22	42	40	46	64	421	140	70	59	86	77	59	45
23	40	40	48	72	412	131	68	59	93	76	58	45
24	40	40	49	79	430	124	67	58	100	76	58	45
25	40	40	49	84	604	116	66	61	98	75	57	44
26	40	40	49	91	571	104	66	65	105	74	57	44
27	40	40	49	100	499	104	70	74	109	74	56	44
28	39	40	49	112	531	103	72	82	107	73	56	43
29	39		50	125	557	100	73	86	97	73	55	43
30	39		50	141	475	98	74	89	93	72	55	42
31	39		52		416		75	87		71		42
MEAN	45	39	45	66	581	286	79	64	84	81	63	48
MAXIMUM	56	40	52	141	982	532	101	89	109	92	71	55
MINIMUM	39	38	40	52	169	98	66	56	65	71	55	42

Gage operated May 25–Sep 29. Estimated Sep 30–Dec 31 (measurements at gage), Jan 1–May 24 (regression with USGS Sourdough 15200280).

Table B13. 2005 Delta River at Denali Highway daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	42	32	31	30	205	500	247	129	119	286	150	80
2	41	32	31	30	250	534	241	131	125	280	147	79
3	41	31	32	29	272	560	265	132	122	274	144	77
4	41	31	31	30	299	562	279	136	114	269	141	75
5	40	31	32	29	321	547	304	136	150	263	138	74
6	40	31	32	29	339	539	303	132	215	258	135	72
7	40	30	31	29	356	577	277	126	273	252	132	71
8	39	30	30	29	380	528	239	115	297	247	130	69
9	39	30	32	29	409	490	217	107	289	242	127	68
10	39	29	30	29	443	437	205	101	344	237	124	66
11	38	29	32	29	465	409	209	94	438	232	122	65
12	38	29	33	30	463	393	204	89	438	227	119	64
13	38	29	32	30	442	389	191	86	413	223	117	62
14	37	28	32	30	433	408	173	84	379	218	114	61
15	37	28	32	30	474	410	160	82	330	214	112	60
16	37	28	33	30	734	397	153	80	287	209	110	59
17	36	28	33	30	846	377	145	77	304	205	107	57
18	36	28	33	31	821	357	144	78	314	201	105	56
19	36	28	32	31	710	372	135	83	304	197	103	55
20	35	28	31	32	586	422	124	88	282	193	101	54
21	35	29	33	31	498	438	119	97	239	189	99	53
22	35	29	31	33	535	386	116	117	213	185	97	52
23	34	30	31	33	574	347	113	131	240	181	95	51
24	34	30	31	35	585	328	109	170	315	177	93	50
25	34	30	30	37	598	316	103	183	413	173	91	49
26	34	30	30	39	595	311	97	176	408	170	89	48
27	33	30	30	42	574	298	91	168	361	166	87	47
28	33	30	31	49	535	279	90	151	346	163	85	46
29	33		30	77	514	273	98	127	325	160	84	45
30	32		30	125	485	262	117	121	292	156	82	44
31	32		29		475		126	119		153		43
MEAN	37	30	31	37	491	415	174	118	290	213	113	60
MAXIMUM	42	32	33	125	846	577	304	183	438	286	150	80
MINIMUM	32	28	29	29	205	262	90	77	114	153	82	43

Gage operated Jun 7–Sep 30. Estimated Jan 1–Feb 16, Oct 1–Dec 31 (measurements at gage), Feb 17–Jun 6 (regression with BLM's Paxson Lake Outlet gage).

Table B14. 2000 Delta River at Long Tangle Lake daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	138	112	92	74	74	1,778	844	325	322	514	364	260
2	138	111	91	74	77	1,707	739	309	318	508	360	258
3	137	110	91	73	80	1,621	660	303	320	502	356	255
4	136	110	90	73	83	1,605	618	300	325	497	352	252
5	135	109	89	72	86	1,691	614	298	338	491	348	249
6	134	108	89	72	89	1,788	697	299	329	486	344	246
7	133	107	88	71	91	1,910	680	296	322	480	340	244
8	132	107	87	71	97	2,022	615	287	307	475	336	241
9	131	106	87	71	103	1,943	557	283	337	470	333	238
10	130	105	86	71	108	1,583	509	278	326	465	329	236
11	129	105	86	71	114	1,405	475	266	319	459	325	233
12	128	104	85	71	120	1,349	454	256	328	454	322	230
13	128	103	85	71	128	1,217	456	251	343	449	318	228
14	127	102	84	71	134	1,138	464	245	353	444	315	225
15	126	102	83	71	139	1,118	473	232	350	439	311	223
16	125	101	83	68	148	1,118	473	272	333	435	308	220
17	124	100	82	68	161	1,079	491	258	315	430	304	218
18	123	100	82	68	175	1,079	541	251	337	425	301	216
19	122	99	81	68	189	1,182	584	245	313	420	298	213
20	122	98	81	68	202	1,133	570	247	293	416	294	211
21	121	98	80	68	216	988	522	253	283	411	291	208
22	120	97	79	68	229	823	480	243	309	407	288	206
23	119	96	79	68	243	831	475	254	384	402	285	204
24	118	96	78	68	243	894	475	250	445	398	282	202
25	117	95	78	68	256	930	449	251	499	393	278	199
26	117	94	77	68	304	907	422	259	543	389	275	197
27	116	94	77	71	351	893	413	259	537	385	272	195
28	115	93	76	71	418	926	402	259	531	380	269	193
29	114	92	76	74	884	961	387	260	525	376	266	191
30	114		75	74	1,799	925	367	288	519	372	263	189
31	113		75		1,838		347	320		368		186
MEAN	125	102	83	71	296	1,285	524	271	370	437	311	221
MAXIMUM	138	112	92	74	1,838	2,022	844	325	543	514	364	260
MINIMUM	113	92	75	68	74	823	347	232	283	368	263	186

Gage operated Jun 22–Sep 26. Estimated Jan 1–June 21, Sep 27–Dec 31 (regression with BLM's Delta River above Eureka Creek gage).

Table B15. 2001 Delta River at Long Tangle Lake daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	184	131	96	68	214	777	346	559	218	223	175	138
2	182	129	95	67	217	952	342	606	228	221	174	137
3	180	128	94	66	241	1,309	334	571	228	220	172	136
4	178	126	92	65	245	1,476	318	537	230	218	171	135
5	176	125	91	65	274	1,429	334	518	241	216	170	134
6	174	124	90	68	301	1,443	389	478	276	215	168	133
7	172	122	89	72	329	1,526	430	435	299	213	167	132
8	171	121	88	72	358	1,498	435	395	319	211	166	131
9	169	119	87	75	389	1,269	419	363	313	210	164	130
10	167	118	86	75	420	1,094	415	337	299	208	163	129
11	165	117	86	78	453	987	416	313	284	206	162	128
12	163	116	85	82	463	925	413	297	271	205	160	127
13	161	114	84	85	490	906	407	282	264	203	159	126
14	160	113	83	85	536	816	396	271	256	201	158	125
15	158	112	82	93	619	742	389	262	253	200	157	124
16	156	111	81	93	728	700	375	258	249	198	156	123
17	154	109	80	102	738	664	356	253	241	197	154	122
18	153	108	79	102	723	618	339	252	234	195	153	121
19	151	107	78	110	689	590	326	250	232	194	152	120
20	149	106	77	110	638	577	324	239	235	192	151	119
21	148	105	77	119	616	574	367	230	242	191	150	118
22	146	103	76	119	573	556	470	231	245	189	148	117
23	144	102	75	129	554	523	550	241	247	188	147	116
24	143	101	74	131	574	500	535	240	239	186	146	115
25	141	100	73	142	609	453	484	241	236	185	145	115
26	140	99	72	153	523	422	447	242	232	183	144	114
27	138	98	72	155	450	398	431	243	230	182	143	113
28	137	97	71	167	505	400	422	243	228	181	142	112
29	135		70	179	603	390	411	241	227	179	140	111
30	134		69	191	631	353	408	236	225	178	139	110
31	132		68		687		465	232		176		109
MEAN	157	113	81	104	496	829	403	326	251	199	157	123
MAXIMUM	184	131	96	191	738	1,526	550	606	319	223	175	138
MINIMUM	132	97	68	65	214	353	318	230	218	176	139	109

Gage operated May 27–Sep 26. Estimated Jan 1–May 26, Sep 27–Dec 31 (regression with BLM's Delta River above Eureka Creek gage).

Table B16. 2002 Delta River at Long Tangle Lake daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	106	82	66	51	48	672	306	193	486	671	501	390
2	105	82	65	51	48	636	340	183	466	669	497	387
3	104	81	65	50	48	608	326	178	466	638	493	384
4	103	80	64	50	48	549	336	173	422	633	489	381
5	102	80	64	50	48	500	300	168	386	627	485	378
6	102	79	63	48	48	480	293	174	402	622	481	374
7	101	78	63	48	51	470	283	189	512	617	477	371
8	100	78	62	48	54	442	270	233	612	612	473	368
9	99	77	62	48	56	400	255	393	640	607	469	365
10	98	77	61	48	59	380	232	606	620	602	465	362
11	98	76	61	48	61	353	223	803	568	597	461	359
12	97	75	60	48	64	352	214	1,345	529	592	457	356
13	96	75	60	48	67	360	205	1,748	508	587	454	353
14	95	74	59	48	70	344	196	1,518	498	582	450	350
15	94	74	59	48	73	345	187	1,076	483	577	446	347
16	94	73	58	47	76	329	173	778	452	573	442	345
17	93	72	58	47	82	279	169	604	424	568	439	342
18	92	72	57	47	92	233	170	497	395	563	435	339
19	91	71	57	47	102	242	171	449	364	558	431	336
20	91	71	56	47	117	396	164	477	349	554	428	333
21	90	70	56	47	133	350	161	803	382	549	424	331
22	89	69	55	47	149	343	159	1,533	351	545	421	328
23	89	69	55	47	170	329	157	1,809	335	540	417	325
24	88	68	54	47	256	341	162	1,463	328	536	414	322
25	87	68	54	47	352	384	171	1,154	408	531	410	320
26	86	67	54	47	448	334	176	922	603	527	407	317
27	86	67	53	47	550	286	184	758	760	522	404	314
28	85	66	53	47	656	295	195	636	827	518	400	312
29	84		52	48	792	292	199	549	771	514	397	309
30	84		52	48	728	282	206	491	692	510	394	307
31	83		51		715		200	483		505		304
MEAN	94	74	58	48	202	387	219	722	501	576	445	346
MAXIMUM	106	82	66	51	792	672	340	1,809	827	671	501	390
MINIMUM	83	66	51	47	48	233	157	168	328	505	394	304

Gage operated May 29–Oct 3. Estimated Jan 1–May 28, June 20–Jul 4, Oct 4–Dec 31 (regression with BLM's Delta River above Eureka Creek gage).

Table B17. 2003 Delta River at Long Tangle Lake daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	302	233	185	143	244	782	314	619	500	407	189	163
2	299	231	183	141	269	838	321	583	543	410	188	162
3	297	229	182	140	304	949	405	518	553	407	187	161
4	294	227	180	139	340	867	480	454	598	387	186	160
5	292	225	179	138	378	887	481	404	611	377	185	160
6	289	224	177	137	427	1,040	431	363	563	367	184	159
7	287	222	176	136	469	1,154	385	329	523	361	183	158
8	285	220	174	135	465	990	362	296	490	348	182	157
9	282	218	173	133	503	792	349	280	451	344	181	156
10	280	216	171	132	520	752	324	266	423	351	180	156
11	278	214	170	131	528	779	314	254	401	338	180	155
12	275	213	168	130	560	839	311	251	376	311	179	154
13	273	211	167	129	600	846	308	255	365	305	178	153
14	271	209	166	128	653	757	301	256	362	293	177	153
15	268	207	164	127	641	636	296	268	371	257	176	152
16	266	206	163	126	616	567	302	273	345	233	175	151
17	264	204	162	125	627	510	314	274	304	214	174	150
18	262	202	160	124	758	499	324	280	277	202	173	150
19	260	201	159	123	781	496	313	282	296	201	173	149
20	257	199	158	122	715	497	302	280	294	200	172	148
21	255	197	156	121	649	506	293	272	306	199	171	147
22	253	196	155	120	610	519	278	267	302	198	170	147
23	251	194	154	127	588	523	276	265	285	197	169	146
24	249	192	152	138	581	514	279	259	293	196	168	145
25	247	191	151	146	609	487	280	259	297	195	168	145
26	245	189	150	157	666	449	284	266	303	194	167	144
27	243	188	149	169	728	412	317	310	291	193	166	143
28	241	186	147	184	721	364	428	387	288	192	165	142
29	239		146	201	686	348	578	422	321	191	164	142
30	237		145	219	678	322	630	414	361	190	163	141
31	235		144		692		638	436		189		140
MEAN	267	209	163	141	568	664	362	334	390	273	176	151
MAXIMUM	302	233	185	219	781	1,154	638	619	611	410	189	163
MINIMUM	235	186	144	120	244	322	276	251	277	189	163	140

Gage operated Jun 10–Sep 24. Estimated Jan 1–June 9, Sep 25–Dec 31 (regression with BLM's Delta River at Eureka Creek gage).

Table B18. 2004 Delta River at Long Tangle Lake daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	140	120	104	89	222	581	200	140	168	189	163	141
2	139	119	103	89	251	621	194	134	165	188	162	140
3	138	119	103	88	300	643	197	135	141	187	161	139
4	138	118	102	88	378	894	195	130	161	186	160	139
5	137	118	102	88	566	800	196	125	168	186	160	138
6	136	117	101	87	754	153	200	118	154	185	159	137
7	136	116	101	87	1,005	662	207	118	152	184	158	137
8	135	116	100	86	1,471	899	199	116	145	183	157	136
9	134	115	100	86	1,553	927	203	113	139	182	157	135
10	134	115	99	85	1,741	894	205	109	135	181	156	135
11	133	114	99	85	1,784	800	205	111	130	180	155	134
12	132	114	99	85	1,824	705	205	111	129	179	154	133
13	132	113	98	84	1,538	621	200	110	118	178	154	133
14	131	112	98	84	1,278	544	200	108	128	178	153	132
15	130	112	97	83	1,211	481	203	102	123	177	152	131
16	130	111	97	83	1,105	441	203	109	114	176	151	131
17	129	111	96	84	1,012	403	200	108	102	175	151	130
18	128	110	96	84	932	381	196	105	126	174	150	130
19	128	110	95	84	851	362	189	103	124	173	149	129
20	127	109	95	92	774	340	186	106	125	172	148	128
21	127	109	94	97	681	320	180	105	127	172	148	128
22	126	108	94	107	625	307	170	106	137	171	147	127
23	125	108	93	109	556	287	159	105	137	170	146	126
24	125	107	93	117	582	274	151	104	153	169	146	126
25	124	107	92	129	699	254	142	105	159	168	145	125
26	124	106	92	142	678	220	137	117	173	168	144	125
27	123	106	92	151	625	228	134	129	165	167	143	124
28	122	105	91	164	649	221	143	154	184	166	143	123
29	122	104	91	178	668	211	143	168	173	165	142	123
30	121		90	200	607	206	142	175	190	164	141	122
31	121		90		561		142	171		164		122
MEAN	130	112	97	104	886	489	182	121	145	176	152	131
MAXIMUM	140	120	104	200	1,824	927	207	175	190	189	163	141
MINIMUM	121	104	90	83	222	153	134	102	102	164	141	122

Gage operated Jun 9–Oct 5. Estimated Jan 1–June 8, Oct 1–Dec 31 (regression with BLM's Delta River above Eureka Creek gage) (ice effected record Oct 1–5).

Table B19. 2005 Delta River at Long Tangle Lake daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	121	104	91	78	408	939	433	312	298	538	305	170
2	120	104	90	78	491	998	434	305	313	533	299	167
3	120	103	90	77	531	1,043	470	301	302	523	293	164
4	119	103	90	77	582	1,047	489	303	298	515	288	160
5	119	102	89	77	621	1,020	493	298	328	508	282	157
6	118	102	89	76	653	1,007	498	292	393	501	277	154
7	118	101	88	76	684	996	469	281	481	493	271	151
8	117	101	88	76	726	928	434	267	526	486	266	148
9	116	100	87	75	778	836	406	256	517	477	261	146
10	116	100	87	75	838	772	393	243	610	468	256	143
11	115	99	87	74	878	729	394	230	784	459	251	140
12	115	99	86	74	873	700	399	217	786	450	246	137
13	114	98	86	74	836	697	391	215	765	441	241	135
14	114	98	85	73	820	721	373	206	705	433	237	132
15	113	97	85	73	892	733	365	203	620	424	232	129
16	113	97	84	73	1,343	728	357	197	549	416	228	127
17	112	96	84	72	1,534	698	343	191	548	408	223	125
18	111	96	84	72	1,491	662	339	187	553	400	219	122
19	111	95	83	72	1,303	663	329	186	536	393	215	120
20	110	95	83	72	1,088	726	312	191	505	385	211	117
21	110	94	82	71	935	771	320	202	477	378	207	115
22	109	94	82	74	999	694	310	227	451	370	203	113
23	109	94	82	75	1,068	609	298	266	477	363	199	111
24	108	93	81	78	1,087	560	293	336	582	356	195	109
25	108	93	81	82	1,109	527	294	393	723	349	191	107
26	107	92	80	86	1,103	502	290	393	754	343	187	105
27	107	92	80	93	1,067	481	280	377	696	336	184	103
28	106	91	80	108	1,000	445	275	360	633	330	180	101
29	106		79	163	964	439	279	332	578	323	177	99
30	105		79	257	913	431	293	315	543	317	173	97
31	105		79		895		309	305		311		95
MEAN	113	98	85	86	920	737	367	271	544	420	233	129
MAXIMUM	121	104	91	257	1,534	1,047	498	393	786	538	305	170
MINIMUM	105	91	79	71	408	431	275	186	298	311	173	95

Gage operated Jun 7–Sep 30. Estimated Jan 1–Apr 19 (regression with BLM's Delta River above Eureka Creek gage), Apr 20–Jun 6, Oct 1–Dec 31 (regression with BLM's Delta River at Denali Highway gage).

Table B20. 2000 Delta River above Garrett Creek daily mean discharge (cfs)

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	161	128	104	82	82	1,922	1,532	448	411	602	417	292
2	160	127	103	82	85	1,902	1,393	428	414	595	412	288
3	159	126	102	81	89	1,866	1,271	421	427	588	407	285
4	158	126	101	81	92	1,870	1,180	409	434	581	402	281
5	157	125	101	80	95	1,940	1,118	402	435	574	397	278
6	155	124	100	79	98	2,019	1,042	400	425	568	393	275
7	154	123	99	79	102	2,116	977	390	419	561	388	272
8	153	122	98	79	108	2,203	901	374	410	554	383	268
9	152	121	98	79	114	2,142	823	363	404	548	379	265
10	151	120	97	79	120	1,852	749	357	414	541	374	262
11	150	119	96	79	126	1,702	732	347	416	535	370	259
12	149	118	96	79	132	1,653	707	337	442	529	366	256
13	148	117	95	79	140	1,537	681	337	460	522	361	253
14	147	117	94	79	146	1,465	700	343	456	516	357	250
15	145	116	93	79	152	1,447	680	306	455	510	353	247
16	144	115	93	79	161	1,447	671	334	436	504	349	244
17	143	114	92	76	177	1,411	749	345	419	498	345	241
18	142	113	91	76	190	1,411	765	344	418	492	340	238
19	141	112	91	76	206	1,505	788	339	413	486	336	235
20	140	112	90	76	222	1,461	771	337	392	481	332	233
21	139	111	89	76	239	1,325	712	338	391	475	329	230
22	138	110	89	76	255	1,253	679	331	580	469	325	227
23	137	109	88	76	272	1,207	719	338	569	464	321	225
24	136	108	87	76	277	1,162	661	344	590	458	317	222
25	135	107	87	76	294	1,111	621	339	647	453	313	219
26	134	107	86	76	345	1,061	598	341	639	447	310	217
27	133	106	85	76	568	1,024	575	349	632	442	306	214
28	132	105	85	79	640	1,088	575	347	624	437	302	212
29	131	104	84	79	1,107	1,289	540	347	617	432	299	209
30	130		84	82	1,867	1,555	506	395	610	427	295	207
31	129		83		1,932		480	396		422		204
MEAN	145	116	93	78	337	1,565	803	362	480	507	353	245
MAXIMUM	161	128	104	82	1,932	2,203	1,532	448	647	602	417	292
MINIMUM	129	104	83	76	82	1,024	480	306	391	422	295	204

Gage operated Jul 5–Sep 25. Estimated Jan 1–Jul 4, Sep 26–Dec 31 (regression with BLM's Delta River above Eureka Creek gage).

Table B21. 2001 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	202	140	100	69	305	1,535	513	597	253	265	204	159
2	199	138	99	68	308	1,828	521	645	253	263	202	157
3	197	136	98	68	342	2,007	490	645	255	260	201	156
4	195	135	97	67	345	2,196	471	640	258	258	199	155
5	192	133	95	66	385	2,215	530	598	307	256	197	153
6	190	132	94	70	423	2,307	552	556	323	254	196	152
7	188	130	93	74	461	2,398	554	509	318	252	194	151
8	186	128	92	74	500	2,114	567	466	328	250	192	149
9	183	127	91	78	541	1,943	581	430	333	248	191	148
10	181	125	90	78	579	1,774	616	400	323	245	189	147
11	179	124	89	82	618	1,609	604	375	311	243	188	146
12	177	122	88	86	621	1,566	576	355	302	241	186	145
13	175	121	87	90	650	1,468	553	339	306	239	184	143
14	173	120	86	90	703	1,330	547	327	293	237	183	142
15	171	118	85	100	827	1,249	533	315	284	235	181	141
16	169	117	84	100	990	1,179	497	308	279	233	180	140
17	167	115	83	114	1,009	1,075	463	304	275	231	178	139
18	165	114	82	117	992	1,024	435	300	266	230	177	137
19	163	113	81	132	946	982	408	295	266	228	175	136
20	161	111	80	135	873	925	438	283	288	226	174	135
21	159	110	79	151	844	912	561	273	297	224	172	134
22	157	109	78	154	780	868	570	270	287	222	171	133
23	155	107	77	171	752	811	619	278	298	220	170	132
24	154	106	76	175	782	785	625	287	278	218	168	131
25	152	105	75	190	833	703	590	278	278	216	167	130
26	150	104	74	208	709	678	554	280	276	215	165	128
27	148	102	73	213	629	641	535	287	274	213	164	127
28	146	101	73	231	788	580	512	277	272	211	163	126
29	145		72	250	940	583	484	274	269	209	161	125
30	143		71	270	1,037	538	477	268	267	207	160	124
31	141		70		1,205		550	265		206		123
MEAN	170	119	84	126	701	1,327	533	378	287	234	181	140
MAXIMUM	202	140	100	270	1,205	2,398	625	645	333	265	204	159
MINIMUM	141	101	70	66	305	538	408	265	253	206	160	123

Gage operated May 27–Sep 25. Estimated Jan 1–May 26, Sep 26–Dec 31 (regression with BLM's Delta River above Eureka Creek gage).

Table B22. 2002 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	117	88	69	52	49	880	317	221	693	807	606	459
2	115	88	68	52	49	785	340	211	642	799	600	455
3	114	87	68	51	49	715	346	205	622	792	594	450
4	113	86	67	51	49	640	353	197	586	785	589	446
5	112	85	67	51	49	602	347	191	537	777	584	442
6	111	85	66	51	49	599	344	206	617	770	578	438
7	110	84	65	49	52	574	329	236	725	763	573	434
8	109	83	65	49	56	530	314	310	804	756	568	430
9	109	82	64	49	58	477	300	466	819	749	562	426
10	108	82	64	49	62	448	284	702	790	742	557	422
11	107	81	63	49	66	465	272	1,319	759	735	552	418
12	106	80	63	49	69	446	270	1,951	769	729	547	415
13	105	79	62	49	74	430	262	2,262	747	722	542	411
14	104	79	61	49	77	410	252	2,035	685	715	537	407
15	103	78	61	49	81	403	242	1,523	657	709	532	403
16	102	77	60	49	86	387	229	1,133	615	702	527	399
17	101	77	60	47	93	366	223	891	578	696	522	396
18	100	76	59	47	107	347	222	734	544	689	518	392
19	99	75	59	47	123	361	220	680	502	683	513	389
20	98	75	58	47	145	398	211	792	451	677	508	385
21	98	74	58	47	169	392	203	1,550	482	670	503	381
22	97	73	57	47	194	392	196	2,256	461	664	499	378
23	96	73	57	47	229	381	191	2,384	434	658	494	374
24	95	72	56	47	288	360	193	2,080	436	652	490	371
25	94	71	56	47	416	346	215	1,609	744	646	485	368
26	93	71	55	47	549	343	214	1,289	765	640	481	364
27	92	70	55	47	695	327	217	1,067	1,035	634	476	361
28	92	70	54	47	937	313	222	904	1,068	628	472	358
29	91		54	47	1,006	304	220	786	932	623	467	354
30	90		53	49	1,036	293	226	711	814	617	463	351
31	89		53		958		225	741		611		348
MEAN	102	79	61	49	255	457	258	1,021	677	705	531	401
MAXIMUM	117	88	69	52	1,036	880	353	2,384	1,068	807	606	459
MINIMUM	89	70	53	47	49	293	191	191	434	611	463	348

Gage operated May 29–Sep 25. Estimated Jan 1–May 28, Sep 26–Dec 31 (regression with BLM's Delta River above Eureka Creek gage).

Table B23. 2003 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	345	259	200	150	296	1,308	467	735	614	469	205	178
2	341	256	198	149	335	1,413	512	700	643	475	204	178
3	338	254	196	147	389	1,291	618	641	706	471	203	177
4	335	252	194	146	448	1,161	623	570	829	447	202	176
5	332	249	192	144	479	1,162	633	511	794	435	201	175
6	329	247	191	143	551	1,449	591	460	730	423	200	174
7	326	245	189	142	614	1,479	541	415	670	438	199	174
8	323	242	187	141	713	1,400	496	376	647	420	198	173
9	320	240	185	139	782	1,268	479	354	612	416	197	172
10	317	238	184	138	813	1,243	443	332	560	427	196	171
11	314	236	182	137	830	1,326	421	317	523	408	195	170
12	311	234	180	135	889	1,395	407	317	496	370	195	170
13	308	232	179	134	962	1,298	386	339	482	363	194	169
14	306	229	177	133	1,061	1,159	378	326	461	346	193	168
15	303	227	175	132	1,041	997	363	335	458	296	192	167
16	300	225	174	130	999	910	405	344	440	261	191	166
17	297	223	172	129	1,022	834	404	345	404	236	190	166
18	294	221	171	128	1,265	831	382	353	367	218	189	165
19	292	219	169	127	1,307	793	357	350	360	217	188	164
20	289	217	167	126	1,183	763	342	341	343	216	188	163
21	286	215	166	125	1,061	747	334	336	335	215	187	163
22	284	213	164	123	991	747	319	323	341	214	186	162
23	281	211	163	133	951	760	310	319	344	213	185	161
24	279	209	161	146	937	753	299	314	329	212	184	161
25	276	207	160	157	988	700	296	312	349	211	183	160
26	273	205	158	172	1,094	650	303	349	348	210	182	159
27	271	203	157	189	1,208	599	414	442	336	209	182	158
28	268	202	156	209	1,314	536	655	435	340	208	181	158
29	266		154	233	1,130	518	621	469	373	207	180	157
30	263		153	259	1,115	484	720	477	431	207	179	156
31	261		151		1,141		772	581		206		155
MEAN	301	229	174	150	900	999	461	413	489	312	192	167
MAXIMUM	345	259	200	259	1,314	1,479	772	735	829	475	205	178
MINIMUM	261	202	151	123	296	484	296	312	329	206	179	155

Gage operated Jun 2–Sep 29. Estimated Jan 1–Jun 1, Sep 30–Dec 31 (regression with BLM's Delta River above Eureka Creek gage).

Table B24. 2004 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	155	134	118	102	380	1,010	311	203	218	250	212	180
2	154	134	117	101	473	1,051	308	199	220	249	211	179
3	153	133	116	101	742	1,667	298	191	212	248	209	178
4	153	132	116	101	1,020	1,816	276	189	192	246	208	177
5	152	132	115	100	1,401	1,484	269	186	203	245	207	176
6	151	131	115	100	2,166	1,232	266	179	206	244	206	175
7	151	131	114	99	2,332	1,082	258	171	200	242	205	174
8	150	130	114	99	2,701	1,192	249	170	196	241	204	173
9	149	129	113	98	2,825	1,269	238	166	189	240	203	173
10	148	129	113	98	2,947	1,182	239	162	184	238	202	172
11	148	128	112	97	2,488	1,052	235	156	177	237	201	171
12	147	128	112	97	2,168	826	228	165	174	236	200	170
13	146	127	111	96	2,084	694	218	161	168	235	198	169
14	146	126	111	96	1,881	609	209	159	165	233	197	168
15	145	126	110	96	1,703	543	204	150	169	232	196	167
16	144	125	110	95	1,554	511	199	148	163	231	195	166
17	144	125	109	99	1,402	477	198	152	154	230	194	165
18	143	124	109	102	1,260	461	198	151	147	228	193	164
19	142	124	108	105	1,090	471	196	147	163	227	192	163
20	142	123	108	108	991	462	194	149	173	226	191	163
21	141	122	107	111	955	450	201	151	177	225	190	162
22	141	122	107	120	792	466	199	147	181	223	189	161
23	140	121	106	136	738	430	197	148	203	222	188	160
24	139	121	106	153	747	407	194	147	202	221	187	159
25	139	120	105	166	876	389	194	142	199	220	186	158
26	138	120	105	182	1,090	388	189	150	219	219	185	157
27	137	119	104	203	1,090	367	201	196	229	218	184	157
28	137	119	104	234	1,199	367	213	202	229	216	183	156
29	136	118	103	265	1,273	376	206	204	235	215	182	155
30	135		103	308	1,168	328	201	211	252	214	181	154
31	135		102		1,073		203	216		213		153
MEAN	145	126	110	129	1,439	769	225	170	193	231	196	166
MAXIMUM	155	134	118	308	2,947	1,816	311	216	252	250	212	180
MINIMUM	135	118	102	95	380	328	189	142	147	213	181	153

Gage operated Jun 8–Oct 1. Estimated Jan 1–Jun 30 (regression with BLM's Delta River above Eureka Creek. gage), Oct 2–Dec 31 (measurement at gage).

Table B25. 2005 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	153	129	111	96	491	1,024	723	426	399	800	583	430
2	152	128	110	95	578	1,768	688	415	399	791	577	425
3	151	128	110	94	619	1,698	775	411	393	783	571	421
4	150	127	109	95	671	1,582	765	412	395	776	566	417
5	149	126	109	94	711	1,562	747	405	559	768	560	413
6	148	126	108	94	744	1,619	719	397	578	760	554	408
7	148	125	107	93	775	1,580	690	382	707	752	549	404
8	147	124	107	94	816	1,492	642	361	676	745	543	400
9	146	124	106	93	868	1,383	598	347	691	737	538	396
10	145	123	106	94	926	1,308	576	328	1,010	730	532	392
11	144	122	105	94	965	1,245	563	309	989	722	527	388
12	144	122	104	95	960	1,160	538	297	991	715	521	384
13	143	121	104	95	925	1,220	513	294	1,049	708	516	380
14	142	120	103	97	909	1,236	478	287	943	700	511	376
15	141	120	103	96	979	1,223	453	284	844	693	506	373
16	141	119	102	96	1,404	1,211	438	278	794	686	501	369
17	140	118	102	97	1,579	1,150	426	270	823	679	496	365
18	139	118	101	98	1,539	1,089	417	265	776	673	491	361
19	138	117	101	99	1,367	1,053	406	260	741	666	486	358
20	138	116	100	101	1,166	1,176	388	261	708	659	481	354
21	137	116	100	100	1,020	861	397	286	670	652	476	351
22	136	115	99	103	1,082	784	385	321	631	646	471	347
23	135	115	98	105	1,147	699	372	364	710	639	466	344
24	135	114	98	109	1,165	650	366	464	963	633	461	340
25	134	113	97	113	1,186	615	368	481	1,000	626	457	337
26	133	113	97	119	1,181	590	364	513	992	620	452	333
27	133	112	96	127	1,147	568	352	479	935	614	448	330
28	132	111	96	145	1,082	530	347	469	869	607	443	326
29	131		95	208	1,048	524	351	447	814	601	439	323
30	130		95	310	999	515	367	418	808	595	434	320
31	130		94		982		384	399		589		317
MEAN	141	120	102	112	1,001	1,104	503	365	762	689	505	370
MAXIMUM	153	129	111	310	1,579	1,768	775	513	1,049	800	583	430
MINIMUM	130	111	94	93	491	515	347	260	393	589	434	317

Gage operated Jun 2–Sep 29. Estimated Jan 1–Mar 31, Sep 30–Dec 31 (measurement at gage), Apr 1–Jun 1, Jun 21–29, Jul 18–Aug 10, Sep 30 (regression with BLM's Delta River above Eureka Creek gage).

Table B26. 2006 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	313	229	172	125	181	1,246	856	358	1,010	768	584	448
2	310	226	170	124	185	1,211	802	354	932	762	579	444
3	307	224	168	123	191	1,170	759	349	861	755	574	441
4	304	222	167	122	203	1,100	728	351	806	748	569	437
5	301	220	165	120	210	1,047	699	349	763	742	564	433
6	298	217	163	119	217	971	681	337	708	735	559	429
7	295	215	162	118	217	894	672	336	677	729	554	425
8	292	213	160	117	220	834	649	332	651	722	549	421
9	289	211	159	116	226	772	634	325	752	716	545	418
10	286	209	157	114	217	717	630	330	730	710	540	414
11	283	207	155	113	227	686	622	352	722	703	535	410
12	280	204	154	112	246	688	605	459	702	697	530	407
13	277	202	152	111	275	685	591	520	668	691	526	403
14	275	200	151	110	327	688	591	635	636	685	521	400
15	272	198	149	109	407	710	646	825	607	679	516	396
16	269	196	148	108	512	776	678	947	585	673	512	393
17	266	194	146	107	671	767	673	1,075	571	667	507	389
18	264	192	145	105	800	824	658	1,762	556	661	503	386
19	261	190	143	104	918	840	608	3,343	541	655	498	382
20	258	188	142	103	1,054	844	556	3,405	533	650	494	379
21	256	187	140	102	1,173	804	522	5,229	524	644	490	376
22	253	185	139	101	1,321	838	483	4,363	523	638	485	372
23	251	183	137	100	1,498	901	445	4,071	605	633	481	369
24	248	181	136	105	1,572	903	420	3,184	618	627	477	366
25	246	179	135	116	1,563	914	404	2,894	611	622	473	363
26	243	177	133	127	1,529	1,003	386	2,661	625	616	469	360
27	241	175	132	140	1,497	1,045	362	2,312	737	611	464	356
28	238	174	131	154	1,475	1,058	354	1,883	796	605	460	353
29	236		129	170	1,416	996	343	1,521	782	600	456	350
30	233		128	186	1,331	921	346	1,276	775	595	452	347
31	231		127		1,284		360	1,116		590		344
MEAN	270	200	148	119	747	895	573	1,524	687	675	516	394
MAXIMUM	313	229	172	186	1,572	1,246	856	5,229	1,010	768	584	448
MINIMUM	231	174	127	100	181	685	343	325	523	590	452	344

Gage operated Jun 12–Sep 28. Estimated Jan 1–Apr 23, Sep 29–Dec 31 (measurements at gage), Apr 24–Jun 11 (regression with BLM's Paxson Outlet gage).

Table B27. 2007 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	341	259	203	154	311	1,136	388	351	253	572	223	183
2	338	257	201	153	405	1,085	368	343	251	572	221	182
3	335	255	199	151	706	1,192	363	340	248	562	220	181
4	332	253	197	150	1,139	1,206	369	342	244	522	218	180
5	329	250	195	149	1,599	1,339	370	352	242	493	217	179
6	326	248	194	147	1,959	1,205	385	357	240	473	216	178
7	323	246	192	146	3,031	1,055	381	357	243	463	214	176
8	321	244	190	145	3,692	879	383	355	266	410	213	175
9	318	242	189	144	3,793	768	387	357	324	386	212	174
10	315	240	187	142	3,227	736	391	350	493	364	210	173
11	312	237	185	141	3,031	698	392	337	747	307	209	172
12	309	235	184	140	2,940	687	378	323	732	324	207	171
13	307	233	182	140	2,537	664	381	311	659	340	206	170
14	304	231	181	140	2,155	627	378	297	598	340	205	169
15	301	229	179	140	1,983	602	372	285	547	350	203	168
16	299	227	177	140	2,106	581	348	279	517	330	202	166
17	296	225	176	140	2,298	565	334	276	527	331	201	165
18	293	223	174	140	2,261	583	417	267	507	334	200	164
19	291	221	173	140	1,983	574	393	257	527	321	198	163
20	288	219	171	140	1,796	583	391	251	859	336	197	162
21	286	217	170	140	1,635	559	385	253	1,033	293	196	161
22	283	215	168	140	1,546	544	398	251	924	239	194	160
23	281	214	167	140	1,459	520	403	249	784	236	193	159
24	278	212	165	140	1,378	483	409	260	700	235	192	158
25	276	210	164	140	1,337	452	402	267	654	233	191	157
26	273	208	162	140	1,286	428	382	267	659	232	189	156
27	271	206	161	147	1,292	398	364	270	700	230	188	155
28	269	204	160	161	1,488	384	344	264	664	229	187	154
29	266		158	194	1,355	363	326	257	638	227	186	153
30	264		157	252	1,223	359	325	253	587	226	185	152
31	262		155		1,090		347	253		224		151
MEAN	300	231	178	149	1,872	709	376	298	546	346	203	167
MAXIMUM	341	259	203	252	3,793	1,339	417	357	1,033	572	223	183
MINIMUM	262	204	155	140	311	359	325	249	240	224	185	151

Gage operated Jun 17–Sep 24. Estimated Jan 1–Jun 16, Sep 25–Dec 31 (regression with USGS Sourdough 15200280).

Table B28. 2008 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	150	12	102	97	576	636	505	1,069	361	564	404	322
2	149	122	102	97	777	612	494	953	352	576	401	320
3	148	121	102	97	1,062	592	473	863	352	580	398	317
4	147	120	102	101	1,599	584	444	778	363	568	395	315
5	146	120	102	101	2,862	580	418	731	358	560	392	313
6	145	119	102	101	2,248	552	417	716	356	536	389	310
7	144	118	102	101	2,042	524	466	707	370	528	386	308
8	143	117	102	104	1,987	524	486	703	369	501	383	306
9	142	116	102	104	1,920	564	517	679	414	497	381	303
10	141	116	101	104	1,812	620	513	694	519	501	378	301
11	141	115	101	104	1,774	665	491	684	723	493	375	299
12	140	114	101	104	1,837	725	475	656	944	501	372	296
13	139	113	101	108	1,774	737	450	635	1,067	493	369	294
14	138	113	101	108	1,562	765	431	608	1,101	465	366	292
15	137	112	101	108	1,363	693	410	583	1,042	461	364	290
16	136	111	101	108	1,202	621	388	552	936	469	361	288
17	135	111	101	112	1,099	549	394	540	963	453	358	285
18	134	110	101	112	1,070	531	513	534	969	437	356	283
19	133	109	101	112	1,054	493	544	517	915	398	353	281
20	133	108	100	116	1,038	464	581	496	888	358	350	279
21	132	108	100	119	1,038	453	585	490	878	319	348	277
22	131	107	100	127	1,066	448	645	487	830	300	345	275
23	130	106	100	138	1,091	446	1,133	459	777	304	342	273
24	129	106	100	146	1,030	531	1,395	440	732	307	340	271
25	128	105	100	157	968	540	1,375	434	701	311	337	269
26	128	104	100	180	1,009	534	1,213	424	677	315	335	267
27	127	104	100	214	956	526	1,096	407	652	315	332	265
28	126	103	100	257	871	508	1,142	396	636	319	330	263
29	125	103	100	331	794	486	1,322	381	612	315	327	261
30	124		100	457	733	475	1,265	371	592	311	325	259
31	123		100		677		1,174	372		307		257
MEAN	136	112	101	141	1,319	566	702	592	682	431	363	288
MAXIMUM	150	123	102	457	2,862	765	1,395	1,069	1,101	580	404	322
MINIMUM	123	103	100	97	576	446	388	371	352	300	325	257

Gage operated Jun 17–Sep 24. Estimated Jan 1–Jun 16, Sep 25–Dec 31 (regression with USGS Sourdough 15200280).

Table B29. 2009 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	255	201	163	129	1,005	800	475	212	491	284	239	203
2	253	200	162	128	1,457	702	448	214	466	282	238	202
3	251	198	160	127	2,130	630	426	208	440	281	237	201
4	249	197	159	126	3,187	580	407	201	409	279	236	200
5	247	195	158	125	3,915	541	394	198	397	278	234	199
6	245	194	157	124	3,549	527	383	207	380	276	233	198
7	243	192	156	123	2,876	509	373	209	360	275	232	197
8	242	191	155	122	2,272	477	364	205	341	273	230	195
9	240	190	153	121	1,976	445	349	212	328	272	229	194
10	238	188	152	120	1,878	417	335	211	314	270	228	193
11	236	187	151	119	1,773	394	331	204	310	269	227	192
12	234	185	150	119	1,603	377	319	206	301	267	225	191
13	233	184	149	118	1,543	454	307	212	297	266	224	190
14	231	183	148	117	1,464	859	294	221	292	264	223	189
15	229	181	147	116	1,382	1,012	280	285	283	263	222	188
16	227	180	145	115	1,336	880	276	426	278	261	221	187
17	226	178	144	115	1,235	733	279	637	276	260	219	186
18	224	177	143	117	1,132	708	278	702	273	259	218	185
19	222	176	142	121	1,062	730	271	783	271	257	217	184
20	221	174	141	125	1,040	751	274	755	272	256	216	183
21	219	173	140	125	1,018	772	275	683	278	254	215	182
22	217	172	139	132	968	757	268	598	323	253	213	181
23	216	171	138	140	911	817	263	532	295	252	212	180
24	214	169	137	148	846	798	252	484	295	250	211	179
25	212	168	136	160	800	751	249	437	293	249	210	178
26	211	167	135	181	788	702	252	419	292	248	209	177
27	209	165	134	222	782	649	248	483	290	246	208	176
28	208	164	133	237	788	596	239	468	289	245	207	175
29	206		132	402	1,040	555	234	522	287	243	205	174
30	205		131	636	1,009	514	226	522	285	242	204	173
31	203		130		911		223	510		241		172
MEAN	228	182	146	160	1,538	648	309	392	323	262	221	187
MAXIMUM	255	201	163	636	3,915	1,012	475	783	491	284	239	203
MINIMUM	203	164	130	115	782	377	223	198	271	241	204	172

Gage operated Jun 19–Sep 24. Estimated Jan 1–Jun 18, Sep 25–Dec 31 (regression with USGS Sourdough 15200280).

Table B30. 2010 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	171	145	124	107	380	340	723	562	451	247	209	178
2	170	144	123	107	453	349	700	520	442	245	208	177
3	169	143	123	107	600	335	646	484	424	244	207	176
4	169	142	122	107	848	321	621	451	405	243	205	175
5	168	141	121	107	1,016	314	620	426	386	241	204	174
6	167	141	121	107	932	313	590	410	371	240	203	173
7	166	140	120	108	681	306	566	415	369	239	202	172
8	165	139	119	108	611	302	533	399	374	237	201	171
9	164	138	119	108	499	326	499	392	375	236	200	170
10	163	138	118	109	490	358	460	389	375	235	199	169
11	162	137	117	109	471	490	464	382	373	234	198	168
12	161	136	117	112	453	600	447	377	359	232	197	168
13	160	135	116	115	438	627	420	369	350	231	196	167
14	160	135	115	117	417	612	414	359	337	230	195	166
15	159	134	115	120	395	622	426	356	326	229	194	165
16	158	133	114	123	389	694	514	348	316	227	193	164
17	157	132	114	126	377	699	514	337	308	226	192	163
18	156	132	113	130	364	686	519	329	299	225	191	162
19	155	131	112	133	364	670	512	321	296	224	190	161
20	154	130	112	136	414	640	495	308	291	223	189	161
21	154	130	111	140	523	623	521	301	283	221	188	160
22	153	129	110	143	549	605	561	305	269	220	187	159
23	152	128	110	147	511	579	616	300	254	219	186	158
24	151	127	109	150	468	565	759	287	240	218	185	157
25	150	127	109	181	435	561	832	281	224	217	184	156
26	149	126	108	196	429	568	844	286	233	216	183	155
27	149	125	108	218	429	601	807	284	235	214	182	155
28	148	125	108	244	417	623	751	293	243	213	181	154
29	147		107	276	395	696	681	314	240	212	180	153
30	146		107	317	371	734	617	362	248	211	179	152
31	145		107		352		562	415		210		151
MEAN	158	134	114	144	499	525	588	367	323	228	193	164
MAXIMUM	171	145	124	317	1,016	734	844	562	451	247	209	178
MINIMUM	145	125	107	107	352	302	414	281	224	210	179	151

Gage operated Jun 11–Sep 30. Estimated Jan 1–Jun 10, Oct 1–Dec 31 (regression with USGS Sourdough 15200280).

Table B31. 2011 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	151	127	110	93	409	1,488	465	525	564	262	206	164
2	150	127	109	92	450	1,334	531	721	547	260	205	163
3	149	126	109	92	495	1,178	638	691	536	258	203	161
4	148	125	108	91	544	1,035	662	592	531	256	202	160
5	147	125	107	91	599	889	604	525	509	254	200	159
6	147	124	107	90	659	780	581	492	503	252	199	158
7	146	123	106	90	724	700	604	487	476	250	197	157
8	145	123	106	89	797	670	621	487	449	248	196	155
9	144	122	105	89	956	633	691	487	428	246	194	154
10	143	121	105	89	1,147	599	633	564	418	244	193	153
11	143	121	104	88	1,377	570	542	610	412	243	191	152
12	142	120	103	88	2,195	548	481	564	402	241	190	151
13	141	120	103	89	2,003	519	449	509	397	239	188	150
14	140	119	102	93	1,830	487	439	531	397	237	187	148
15	140	118	102	98	1,697	471	423	739	392	235	185	147
16	139	118	101	103	1,859	461	407	923	389	233	184	146
17	138	117	101	108	2,056	450	428	836	380	232	183	145
18	137	116	100	118	2,320	441	481	799	372	230	181	144
19	137	116	100	130	2,846	428	685	836	360	228	180	143
20	136	115	99	143	2,755	430	904	1,013	358	226	178	142
21	135	115	99	158	2,673	424	793	1,286	349	225	177	141
22	135	114	98	173	2,846	399	662	1,225	346	223	176	140
23	134	113	98	191	3,063	581	564	1,104	356	221	174	138
24	133	113	97	210	2,937	763	509	1,071	358	220	173	137
25	132	112	96	231	2,772	662	481	987	354	218	172	136
26	132	111	96	254	2,625	587	460	873	355	216	170	135
27	131	111	95	279	2,328	525	449	787	347	215	169	134
28	130	110	95	307	2,056	487	439	721	339	213	168	133
29	130		94	338	1,927	455	423	667	301	211	167	132
30	129		94	372	1,778	439	423	621	264	210	165	131
31	128		93		1,617		433	587		208		130
MEAN	139	119	101	149	1,753	648	545	737	406	234	185	146
MAXIMUM	151	127	110	372	3,063	1,488	904	1,286	564	262	206	164
MINIMUM	128	110	93	88	409	399	407	487	264	208	165	130

Gage operated Jun 3–Sep 30. Estimated Jan 1–Jun 2, Jun 23–Sep 29 (regression with USGS Sourdough 15200280). Estimated Oct 1–Dec 31 (measurements at gage).

Table B32. 2012 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	129	102	82	70	1,414	1,460	551	398	520	517	339	226
2	128	101	81	70	1,356	1,330	532	416	526	510	335	223
3	127	100	80	70	1,241	1,226	523	473	516	503	330	220
4	126	100	80	70	1,105	1,193	510	480	516	496	326	217
5	125	99	79	70	1,015	1,389	495	496	513	489	321	214
6	124	98	78	73	971	1,584	482	495	502	483	317	211
7	123	97	78	77	961	1,410	468	487	492	476	313	208
8	122	97	77	85	993	1,168	479	464	480	470	308	205
9	122	96	77	93	1,081	1,257	474	444	455	464	304	202
10	121	95	76	103	1,205	1,214	463	435	445	457	300	200
11	120	94	75	113	1,190	1,258	482	421	430	451	296	197
12	119	94	75	124	1,124	1,176	476	404	430	445	292	194
13	118	93	74	131	1,099	1,170	474	392	418	439	288	192
14	117	92	74	137	1,093	1,076	476	383	401	433	284	189
15	116	91	73	206	1,046	951	466	372	427	427	280	187
16	115	91	73	216	1,018	841	462	363	508	422	277	184
17	114	90	72	228	1,050	756	451	355	680	416	273	182
18	113	89	72	245	1,111	706	442	351	600	410	269	179
19	113	89	71	266	1,154	693	442	352	612	405	266	177
20	112	88	71	289	1,178	679	435	349	732	399	262	174
21	111	87	71	319	1,181	670	438	382	1,076	394	259	172
22	110	87	71	362	1,229	669	475	387	1,098	389	255	170
23	109	86	71	413	1,318	654	491	393	1,070	383	252	167
24	108	85	71	465	1,420	639	499	402	934	378	248	165
25	107	85	70	528	1,584	609	504	406	815	373	245	163
26	107	84	70	605	1,717	592	496	406	729	368	242	161
27	106	83	70	690	1,815	598	468	473	661	363	238	159
28	105	83	70	815	2,033	576	446	534	614	358	235	156
29	104	82	70	939	2,031	575	436	551	573	353	232	154
30	103		70	1,190	1,815	563	421	560	538	349	229	152
31	103		70		1,623		409	538		344		150
MEAN	115	92	74	302	1,296	956	473	431	610	425	281	185
MAXIMUM	129	102	82	1,190	2,033	1,584	551	560	1,098	517	339	226
MINIMUM	103	82	70	70	961	563	409	349	401	344	229	150

Gage operated Jun 6–Oct 1. Estimated Jan 1–Apr 5, Oct 2–Dec 31 (measurements at gage), Apr 6-Jun 5 (regression with USGS Sourdough 15200280).

Table B33. 2013 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	148	97	67	50	55	2,198	399	270	485	485	392	318
2	146	96	66	50	55	2,164	377	266	542	482	389	316
3	144	95	65	50	55	2,118	358	264	681	478	386	314
4	142	93	64	50	55	1,856	348	261	706	475	384	312
5	140	92	63	50	58	1,566	340	264	719	472	381	310
6	138	91	62	50	58	1,344	332	264	686	469	378	308
7	137	90	61	50	58	1,201	328	261	662	465	376	305
8	135	88	60	50	61	1,116	336	260	638	462	373	303
9	133	87	60	50	61	1,078	349	259	636	459	371	301
10	131	86	59	50	65	1,005	346	280	621	456	368	299
11	129	85	58	50	68	911	342	295	630	453	365	297
12	128	84	57	50	80	1,090	338	287	647	450	363	295
13	126	83	57	50	91	1,270	331	287	628	446	360	293
14	124	82	56	50	99	1,184	321	287	615	443	358	291
15	123	80	55	50	121	1,079	313	281	583	440	356	289
16	121	79	54	50	158	1,010	306	286	559	437	353	287
17	119	78	54	50	376	1,020	303	286	543	434	351	285
18	118	77	53	50	456	944	305	303	535	431	348	283
19	116	76	52	50	535	866	309	321	522	428	346	281
20	115	75	52	50	691	791	313	491	507	425	343	279
21	113	74	52	50	894	729	302	832	503	422	341	277
22	111	73	52	50	1,143	679	298	965	469	420	339	275
23	110	72	52	50	1,388	632	298	1,001	459	417	336	274
24	108	71	52	50	1,654	598	292	914	467	414	334	272
25	107	70	51	50	2,082	578	292	814	472	411	332	270
26	106	69	51	51	2,735	554	287	700	484	408	330	268
27	104	68	51	52	3,648	523	282	613	499	405	327	266
28	103	67	51	53	3,881	498	277	559	495	403	325	264
29	101		51	54	2,232	429	272	526	492	400	323	262
30	100		51	55	2,277	418	271	494	488	397	321	261
31	99		51		2,232		269	484		394		259
MEAN	122	81	56	51	885	1,048	317	441	566	438	355	288
MAXIMUM	148	97	67	55	3,881	2,198	399	1,001	719	485	392	318
MINIMUM	99	67	51	50	55	418	269	259	459	394	321	259

Gage operated Jun 13–Sep 27. Estimated Jan 1–Apr 25, Sep 28–Dec 31 (measurements at gage), Apr 6–Jun 12 (regression with USGS Sourdough 15200280).

Table B34. 2014 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	257	208	171	140	2,845	920	1,600	532	657	466	372	299
2	255	206	170	140	2,656	953	1,562	504	645	463	369	297
3	254	205	169	146	2,609	951	1,528	476	648	459	367	295
4	252	203	168	146	3,034	943	1,366	470	627	456	364	293
5	250	202	166	153	2,987	948	1,228	488	625	453	361	291
6	248	201	165	160	2,774	967	1,117	486	637	450	359	288
7	247	199	164	168	2,501	995	1,057	475	618	446	356	286
8	245	198	163	168	2,278	1,002	975	458	614	443	354	284
9	243	196	162	186	2,171	1,077	909	450	590	440	351	282
10	242	195	161	186	2,121	1,104	836	434	618	437	348	280
11	240	194	160	205	2,042	1,104	917	418	607	433	346	278
12	238	192	159	224	1,887	1,044	915	400	604	430	343	276
13	237	191	158	262	1,787	940	904	385	603	427	341	274
14	235	190	156	300	1,705	848	887	382	586	424	338	272
15	233	188	155	359	1,615	795	811	401	582	421	336	270
16	232	187	154	438	1,485	770	746	392	581	418	334	268
17	230	186	153	519	1,396	783	700	421	585	415	331	266
18	229	185	152	601	1,400	825	662	477	591	412	329	264
19	227	183	151	642	1,392	1,136	637	472	576	409	326	262
20	226	182	150	725	1,255	1,347	814	472	595	406	324	261
21	224	181	149	767	1,106	1,272	780	461	563	403	322	259
22	222	180	148	852	1,002	1,215	737	456	524	400	319	257
23	221	178	147	937	969	1,154	682	444	539	397	317	255
24	219	177	146	1,110	926	1,049	655	430	513	394	315	253
25	218	176	145	1,197	900	1,041	663	480	494	392	312	251
26	216	175	144	1,463	882	1,692	660	564	483	389	310	249
27	215	174	143	1,732	873	2,609	650	583	480	386	308	248
28	213	172	142	2,006	884	2,357	667	622	476	383	306	246
29	212		141	2,098	881	1,932	644	677	473	380	304	244
30	211		140	2,375	877	1,637	614	689	470	378	301	242
31	209		140		889		579	673		375		240
MEAN	232	189	155	680	1,682	1,180	887	486	573	419	335	269
MAXIMUM	257	208	171	2,375	3,034	2,609	1,600	689	657	466	372	299
MINIMUM	209	172	140	140	873	770	579	382	470	375	301	240

Gage operated Jun 10–Sep 25. Estimated Jan 1–Apr 1, Sep 26–Dec 31 (measurements at gage), Apr 2–Jun 9, Jun 11–Jul 1 (regression with USGS Sourdough 15200280).

Table B35. 2015 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	239	191	160	160	281	562	587	359	453	1,404	588	435
2	237	189	160	160	329	543	606	360	433	1,102	582	430
3	235	188	160	160	373	552	555	353	407	926	576	426
4	234	186	160	160	427	674	524	342	399	854	570	422
5	232	185	160	160	495	664	493	324	408	801	565	417
6	230	184	160	160	648	652	460	308	399	748	559	413
7	229	182	160	160	1,025	620	429	293	393	704	553	409
8	227	181	160	160	1,693	581	422	289	385	673	548	405
9	225	180	160	160	2,541	548	460	282	390	652	542	401
10	224	178	160	160	2,926	503	466	291	400	655	537	397
11	222	177	160	160	2,959	491	457	328	407	653	532	393
12	220	176	160	160	2,519	482	391	327	435	646	526	389
13	219	175	160	160	2,205	476	410	343	448	629	521	385
14	217	173	160	160	2,988	462	415	353	502	606	516	381
15	216	172	160	160	2,899	457	426	348	536	588	511	377
16	214	171	160	160	2,724	449	426	336	579	580	505	374
17	212	170	160	160	2,433	438	427	354	687	598	500	370
18	211	168	160	160	2,096	429	452	459	709	628	495	366
19	209	167	160	160	1,825	416	448	469	713	665	490	362
20	208	166	160	165	1,614	406	416	510	666	664	485	359
21	206	165	160	165	1,423	393	404	529	620	657	481	355
22	205	164	160	165	1,244	383	419	497	568	650	476	352
23	203	162	160	165	1,100	370	397	453	522	644	471	348
24	202	161	160	165	999	359	365	420	481	637	466	345
25	200	160	160	165	928	355	350	403	434	631	462	341
26	199	160	160	186	848	361	347	386	414	625	457	338
27	198	160	160	201	780	571	337	432	410	618	452	334
28	196	160	160	216	724	664	342	474	450	612	448	331
29	195		160	231	689	665	339	496	658	606	443	328
30	193		160	245	644	625	350	504	1,271	600	439	324
31	192		160		600		356	469		594		321
MEAN	214	173	160	170	1,451	505	428	390	519	698	510	375
MAXIMUM	239	191	160	245	2,988	674	606	529	1,271	1,404	588	435
MINIMUM	192	160	160	160	281	355	337	282	385	580	439	321

Gage operated Jun 4–Sep 24. Estimated Jan 1–Apr 19, Oct 21–Dec 31 (measurements at gage), Apr 20–Jun 3, Sep 25–Oct 20 (regression with USGS Sourdough 15200280).

Table B36. 2016 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	318	233	174	171	1,169	1,427	524	830	506	594	425	307
2	315	230	172	171	1,097	1,293	520	800	479	588	420	304
3	312	228	170	171	1,145	1,260	518	752	461	581	416	301
4	308	226	169	171	1,173	1,205	532	709	445	575	411	298
5	305	223	167	171	1,151	1,417	527	672	433	569	407	294
6	302	221	165	171	1,088	1,476	529	644	441	563	403	291
7	299	219	164	171	1,095	1,543	529	614	463	557	398	288
8	296	217	162	171	1,399	1,514	501	604	471	551	394	285
9	293	215	160	171	1,622	1,365	493	589	487	545	390	282
10	290	212	159	183	1,869	1,236	472	578	479	539	386	279
11	287	210	157	183	2,066	1,088	449	560	491	533	381	276
12	285	208	155	183	1,982	1,001	426	561	620	527	377	273
13	282	206	154	183	1,984	927	430	776	765	522	373	270
14	279	204	152	183	2,150	852	423	751	796	516	369	267
15	276	202	151	183	2,560	790	412	773	781	511	365	264
16	273	200	149	183	3,009	754	436	748	792	505	361	261
17	271	198	148	183	3,004	736	442	697	793	500	358	259
18	268	196	146	183	2,870	716	455	648	756	494	354	256
19	265	194	145	183	2,864	700	459	605	707	489	350	253
20	263	192	143	194	2,604	667	444	594	674	484	346	250
21	260	190	142	194	2,336	652	437	577	632	479	342	248
22	257	188	142	206	2,165	630	440	565	720	473	339	245
23	255	186	142	219	2,116	609	454	562	788	468	335	242
24	252	185	142	231	1,960	587	460	561	740	463	331	240
25	250	183	142	250	1,832	562	748	591	740	458	328	237
26	247	181	157	282	1,667	554	799	714	731	453	324	235
27	245	179	157	421	1,719	557	854	708	699	449	321	232
28	242	177	157	927	1,582	551	845	687	661	444	317	230
29	240	175	171	1,471	1,540	538	806	656	624	439	314	227
30	237		171	1,283	1,613	533	779	620	600	434	311	225
31	235		171		1,554		810	571		430		222
MEAN	274	203	157	302	1,871	925	547	655	626	508	365	263
MAXIMUM	318	233	174	1,471	3,009	1,543	854	830	796	594	425	307
MINIMUM	235	175	142	171	1,088	533	412	560	433	430	311	222

Gage operated May 27–Sep 29. Estimated Jan 1–Apr 25, Sep 30–Dec 31 (measurements at gage), Apr 26–May 26 (regression with USGS Sourdough 15200280).

Table B37. 2017 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	220	157	116	101	1,283	622	385	277	590	480	375	295
2	217	156	115	102	1,346	594	356	279	561	477	372	292
3	215	154	114	103	1,334	568	357	289	517	473	369	290
4	213	152	113	108	1,239	550	361	296	487	469	366	288
5	211	151	111	109	1,067	543	359	296	466	465	363	285
6	208	149	110	115	924	541	363	306	477	461	360	283
7	206	147	109	121	769	534	363	299	455	458	357	281
8	204	146	108	127	645	511	350	296	431	454	354	278
9	202	144	107	134	654	511	380	281	417	450	351	276
10	199	143	105	146	693	495	378	275	406	447	349	274
11	197	141	104	160	786	471	383	261	406	443	346	272
12	195	140	103	175	809	438	385	269	414	440	343	270
13	193	138	102	189	806	452	403	288	396	436	340	267
14	191	137	101	204	829	432	418	300	383	433	338	265
15	189	135	100	219	884	404	402	303	379	429	335	263
16	187	134	99	235	985	381	387	309	373	426	332	261
17	185	132	98	250	1,068	358	379	311	366	423	330	259
18	183	131	97	266	987	334	364	318	356	419	327	257
19	181	129	96	283	877	310	343	317	352	416	324	255
20	179	128	95	312	792	313	343	320	335	412	322	253
21	177	127	94	356	738	320	314	311	356	409	319	251
22	175	125	94	414	762	309	294	310	404	406	317	249
23	173	124	94	472	952	314	288	320	493	403	314	247
24	171	123	94	531	1,034	308	282	361	491	399	312	245
25	170	121	94	615	953	296	273	350	516	396	309	243
26	168	120	94	702	867	312	272	347	500	393	307	241
27	166	119	94	814	796	314	265	423	496	390	304	239
28	164	117	94	930	742	323	262	490	492	387	302	237
29	162		94	1,050	705	332	268	497	488	384	299	235
30	161		94	1,167	678	413	257	539	484	381	297	233
31	159		94		654		262	547		378		232
MEAN	188	136	101	350	892	420	339	335	443	427	334	262
MAXIMUM	220	157	116	1,167	1,346	622	418	547	590	480	375	295
MINIMUM	159	117	94	101	645	296	257	261	335	378	297	232

Gage operated Jun 8–Sep 25. Estimated Jan 1–Mar 31, Sep 26–Dec 31 (measurements at gage), Apr 1–Jun 7 (regression with USGS Sourdough 15200280).

Table B38. 2018 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	230	179	143	120	228	2,664	842	324	920	602	434	317
2	228	178	142	120	237	2,518	820	326	850	596	430	314
3	226	176	141	121	248	2,440	768	330	784	589	425	310
4	224	175	140	122	262	2,431	708	344	732	583	421	307
5	222	173	139	122	279	2,366	659	391	672	577	417	304
6	221	172	137	124	307	2,248	619	579	643	571	412	301
7	219	171	136	125	354	2,089	586	834	608	565	408	298
8	217	169	135	128	423	1,990	549	1,066	576	559	404	294
9	215	168	134	133	525	1,861	520	1,248	560	553	399	291
10	214	167	133	138	717	1,801	487	1,124	539	548	395	288
11	212	165	132	145	1,481	1,991	499	948	519	542	391	285
12	210	164	131	151	2,613	3,032	505	820	504	536	387	282
13	209	163	130	156	2,671	3,107	501	767	487	531	383	279
14	207	161	129	160	2,421	2,561	495	806	471	525	379	276
15	205	160	128	164	2,273	2,118	498	816	471	520	375	274
16	204	159	127	168	2,328	1,843	486	868	460	514	371	271
17	202	158	126	172	2,345	1,688	529	1,003	455	509	367	268
18	200	156	125	175	2,402	1,531	530	1,038	449	503	363	265
19	199	155	124	179	2,668	1,358	519	981	440	498	360	262
20	197	154	123	180	2,835	1,229	500	895	438	493	356	260
21	196	153	122	182	2,745	1,125	475	895	440	488	352	257
22	194	151	121	185	2,789	1,031	448	1,150	462	483	348	254
23	193	150	120	187	2,950	999	427	1,250	547	478	345	251
24	191	149	119	190	3,343	1,010	406	1,395	575	473	341	249
25	189	148	118	194	3,273	1,089	388	1,429	643	468	338	246
26	188	147	118	198	2,943	1,248	373	1,394	634	463	334	244
27	186	145	118	204	2,791	1,224	365	1,378	628	458	331	241
28	185	144	118	209	2,814	1,078	357	1,314	621	453	327	239
29	183		118	216	2,833	963	350	1,196	615	448	324	236
30	182		118	222	2,757	880	340	1,080	608	444	320	234
31	181		118		2,740		333	1,029		439		231
MEAN	204	161	128	163	1,922	1,784	512	936	578	516	375	272
MAXIMUM	230	179	143	222	3,343	3,107	842	1,429	920	602	434	317
MINIMUM	181	144	118	120	228	880	333	324	438	439	320	231

Gage operated Jul 10–Sep 26. Estimated Jan 1–Mar 31, Sep 27–Dec 31 (measurements at gage), Apr 1–Jul 9 (regression with USGS Sourdough 15200280).

Table B39. 2019 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	230	166	123	169	283	1,024	429	238	171	399	320	259
2	228	164	122	170	342	1,027	397	236	173	410	318	257
3	225	162	120	172	620	1,043	405	234	171	443	316	255
4	223	160	120	174	1,509	1,073	382	231	171	435	313	254
5	221	159	120	176	1,671	1,035	356	226	177	440	311	252
6	218	157	120	177	1,519	996	342	229	178	432	309	250
7	216	155	120	179	1,513	982	322	215	178	369	307	248
8	214	154	120	180	1,900	943	306	207	179	344	305	246
9	211	152	120	183	2,577	915	293	208	176	356	303	245
10	209	151	120	185	2,426	899	282	203	176	362	300	243
11	207	149	126	188	2,154	878	270	198	176	439	298	241
12	205	147	129	191	1,902	906	264	195	177	519	296	240
13	203	146	131	193	1,656	897	263	194	172	465	294	238
14	200	144	132	196	1,490	871	258	193	169	374	292	236
15	198	143	135	200	1,397	854	253	187	167	361	290	235
16	196	141	137	203	1,346	811	247	192	173	359	288	233
17	194	140	141	206	1,320	831	234	183	171	356	286	231
18	192	138	143	208	1,275	833	234	175	217	354	284	230
19	190	137	146	210	1,241	793	223	178	337	351	282	228
20	188	135	149	212	1,226	773	231	189	295	349	280	226
21	186	134	151	215	1,205	753	227	185	438	346	278	225
22	184	132	152	219	1,177	725	222	179	555	344	276	223
23	182	131	154	222	1,174	694	217	173	554	341	274	222
24	180	130	156	227	1,197	677	225	169	524	339	272	220
25	178	128	157	232	1,174	658	223	169	486	336	270	219
26	177	127	159	236	1,152	614	235	173	433	334	268	217
27	175	126	160	241	1,168	569	253	171	410	332	266	216
28	173	124	162	245	1,185	522	245	170	407	329	265	214
29	171		164	251	1,162	488	240	170	404	327	263	212
30	169		165	262	1,092	462	234	169	401	325	261	211
31	167		167		1,042		239	169		322		210
MEAN	197	144	139	204	1,358	818	276	194	280	374	290	233
MAXIMUM	230	166	167	262	2,577	1,073	429	238	555	519	320	259
MINIMUM	167	124	120	169	283	462	217	169	167	322	261	210

Gage operated Jun 6–Sep 26. Estimated Jan 1–Mar 11, Sep 27–Oct 1, Oct 15–Dec 31 (measurements at gage), Mar 11–Jun 5, Oct 2–14 (regression with USGS Sourdough 15200280).

Table B40. 2020 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	208	167	136	110	448	2,294	1,112	630	624	534	399	301
2	207	166	135	110	668	2,368	1,032	697	750	529	395	298
3	205	165	134	111	1,032	2,416	961	701	798	524	392	295
4	204	164	133	112	1,427	2,408	896	735	847	519	388	293
5	202	162	132	113	1,676	2,355	900	706	817	514	384	290
6	201	161	131	114	1,857	2,445	913	678	751	509	381	287
7	199	160	130	114	2,000	2,196	927	623	713	505	377	284
8	198	159	130	115	2,119	1,957	892	581	665	500	374	282
9	197	158	129	115	2,109	2,045	851	577	612	495	370	279
10	195	157	128	115	2,330	2,041	820	542	580	491	367	276
11	194	156	127	115	2,686	1,916	804	538	562	486	363	274
12	192	155	126	116	2,774	1,756	839	543	535	481	360	271
13	191	153	125	116	2,802	1,636	1,115	534	507	477	356	269
14	190	152	124	116	2,919	1,547	1,066	523	488	473	353	266
15	188	151	123	117	2,897	1,477	1,006	508	469	468	350	264
16	187	150	122	117	2,742	1,458	956	505	453	464	346	261
17	186	149	122	116	2,686	1,374	956	490	452	459	343	259
18	184	148	121	116	2,563	1,269	942	472	532	455	340	256
19	183	147	120	117	2,361	1,263	902	447	504	451	337	254
20	182	146	119	118	2,232	1,314	857	421	503	447	334	252
21	181	145	118	119	2,183	1,312	827	403	514	442	331	249
22	179	144	117	121	2,145	1,409	823	383	535	438	327	247
23	178	143	117	122	2,094	1,656	811	378	528	434	324	245
24	177	142	116	125	1,985	1,865	790	368	526	430	321	242
25	176	141	115	133	2,083	2,025	796	376	532	426	318	240
26	174	140	114	145	2,675	1,839	824	388	521	422	315	238
27	173	139	113	167	2,995	1,568	833	451	513	418	312	236
28	172	138	112	197	2,673	1,348	833	469	498	414	309	233
29	171	137	112	240	2,415	1,268	793	495	556	410	307	231
30	169		111	312	2,340	1,179	741	504	534	407	304	229
31	168		110		2,308		677	506		403		227
MEAN	187	152	123	132	2,201	1,767	887	522	581	465	349	262
MAXIMUM	208	167	136	312	2,995	2,445	1,115	735	847	534	399	301
MINIMUM	168	137	110	110	448	1,179	677	368	452	403	304	227

Gage operated Jun 5–Sep 30. Estimated Jan 1–Mar 31, Oct 15–Dec 31 (measurements at gage), Apr 1–Jun 4, Oct 2–14 (regression with USGS Sourdough 15200280).

Table B41. 2021 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	225	168	129	110	293	1,974	945	389	835	425	315	245
2	223	166	128	110	324	1,816	838	376	764	403	321	243
3	221	165	127	110	373	1,959	737	358	716	387	322	240
4	219	163	125	110	425	1,895	671	364	672	409	321	238
5	216	162	124	109	514	1,855	622	370	634	401	317	235
6	214	160	123	109	639	1,926	581	361	684	392	314	233
7	212	159	122	109	952	1,980	571	351	697	398	311	231
8	210	157	121	109	1,222	1,789	596	394	672	401	308	228
9	208	156	120	109	1,277	1,589	617	474	653	407	305	226
10	207	154	119	110	1,238	1,318	650	548	625	407	302	224
11	205	153	117	110	1,213	1,121	643	626	605	394	299	222
12	203	151	116	111	1,181	990	628	652	585	379	296	220
13	201	150	115	111	1,137	926	620	724	567	379	293	217
14	199	149	114	112	1,127	872	592	703	540	374	290	215
15	197	147	113	113	1,137	844	569	682	522	354	287	213
16	195	146	112	115	1,133	826	546	647	532	353	284	211
17	193	144	111	117	1,130	863	513	630	556	351	282	209
18	192	143	110	121	1,102	878	482	647	543	349	279	207
19	190	142	110	126	1,061	873	466	660	534	347	276	205
20	188	140	110	132	1,004	858	450	698	526	346	273	203
21	186	139	110	140	948	799	430	784	457	344	271	201
22	185	138	110	150	891	742	422	771	446	342	268	199
23	183	137	110	162	894	712	416	753	509	340	265	197
24	181	135	110	171	876	878	437	757	460	345	263	195
25	179	134	110	182	826	827	441	763	461	336	260	193
26	178	133	110	194	801	772	443	758	451	335	257	191
27	176	132	110	209	798	734	434	803	419	334	255	189
28	174	130	110	224	863	703	432	960	492	332	252	187
29	173		110	244	1,073	757	426	989	476	330	250	185
30	171		110	265	1,534	949	413	1,000	438	329	247	184
31	170		110		2,027		401	926		325		182
MEAN	196	148	115	140	968	1,167	549	642	569	366	286	212
MAXIMUM	225	168	129	265	2,027	1,980	945	1,000	835	425	322	245
MINIMUM	170	130	110	109	293	703	401	351	419	325	247	182

Gage operated Jun 2–Dec 31. Estimated Jan 1–Mar 31, Oct 16–Dec 31 (measurements at gage), Apr 1–Jun 1, Jun 24–July 8 (regression with USGS Sourdough 15200280).

Table B42. 2022 Delta River above Garrett Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	180	132	121	122	138	7,334	797	671	1,240	1,251	882	629
2	178	131	121	122	139	7,104	766	667	1,602	1,237	872	622
3	176	130	121	122	138	6,673	710	620	1,642	1,223	863	615
4	175	128	121	122	137	6,309	655	607	1,882	1,210	853	608
5	173	127	121	123	137	5,944	610	658	1,895	1,196	843	601
6	171	126	121	123	139	5,453	582	827	1,833	1,183	834	595
7	170	124	121	124	140	4,911	555	847	1,727	1,169	825	588
8	168	123	121	124	141	4,398	525	1,142	1,648	1,156	815	581
9	166	122	121	125	143	4,116	504	1,876	2,997	1,143	806	575
10	165	121	121	125	152	3,513	498	2,176	3,141	1,131	797	568
11	163	120	121	126	170	3,037	491	2,060	3,152	1,118	788	562
12	161	120	121	126	238	2,659	532	1,683	2,513	1,105	779	556
13	160	120	121	127	488	2,396	522	1,358	2,099	1,093	771	550
14	158	120	122	127	1,809	2,125	516	1,161	1,934	1,081	762	543
15	157	120	122	128	2,772	1,874	500	1,039	1,774	1,069	753	537
16	155	120	122	128	2,997	1,767	613	942	1,643	1,057	745	531
17	153	120	122	129	3,350	1,666	857	915	1,497	1,045	737	525
18	152	120	122	128	4,223	1,601	1,085	883	1,349	1,033	728	519
19	150	120	122	128	5,062	1,460	1,295	932	1,247	1,021	720	514
20	149	120	122	129	5,877	1,347	1,780	925	1,297	1,010	712	508
21	147	120	122	130	6,657	1,258	1,747	908	1,367	999	704	502
22	146	120	122	130	7,071	1,209	1,718	870	1,597	988	696	496
23	145	120	122	130	7,364	1,144	1,761	839	1,681	976	688	491
24	143	120	122	132	7,206	1,026	1,596	824	1,621	966	681	485
25	142	120	122	133	7,113	972	1,399	1,098	1,523	955	673	480
26	140	120	122	134	7,149	915	1,200	1,247	1,410	944	666	475
27	139	120	122	134	7,578	855	1,040	1,355	1,337	933	658	469
28	137	120	122	134	7,816	794	924	1,315	1,294	923	651	464
29	136		122	135	7,590	758	837	1,227	1,280	913	643	459
30	135		122	138	7,429	800	765	1,143	1,265	902	636	454
31	133		122		7,334		710	1,125		892		449
MEAN	156	122	121	128	3,506	2,847	906	1,095	1,750	1,062	753	534
MAXIMUM	180	132	122	138	7,816	7,334	1,780	2,176	3,152	1,251	882	629
MINIMUM	133	120	121	122	137	758	491	607	1,240	892	636	449

Gage operated Jun 8–Sep 27. Estimated Jan 1–Feb 10, Sep 28–Dec 31 (measurements at gage), Feb 11–Jun 8 (regression with USGS Sourdough 15200280).

Table B43. 1997 Delta River above Eureka Creek daily mean discharge (cfs).

Day	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	992	429	558	395	302	256	219
2	890	439	632	391	300	255	218
3	851	420	601	381	299	254	217
4	938	414	577	366	297	252	216
5	1,350	398	530	366	295	251	215
6	1,558	389	496	355	294	250	213
7	1,496	386	496	350	292	249	212
8	1,280	362	479	349	291	247	211
9	1,103	332	491	345	289	246	210
10	976	322	521	344	288	245	209
11	874	306	586	341	286	243	208
12	799	357	849	336	285	242	207
13	757	380	933	331	283	241	206
14	718	384	899	326	282	240	205
15	669	367	887	320	280	238	204
16	623	362	860	316	279	237	203
17	575	356	776	306	277	236	202
18	544	344	716	305	276	235	200
19	520	344	659	284	275	233	199
20	537	367	607	282	273	232	198
21	581	382	580	280	272	231	197
22	576	382	587	284	270	230	196
23	571	413	580	293	269	229	195
24	567	428	562	313	267	227	194
25	552	468	505	311	266	226	193
26	527	427	478	310	265	225	192
27	508	396	471	308	263	224	191
28	479	411	460	307	262	223	190
29	457	396	448	305	261	221	189
30	438	397	420	303	259	220	188
31		500	408		258		187
MEAN	777	389	602	327	279	238	203
MAXIMUM	1,558	500	933	395	302	256	219
MINIMUM	438	306	408	280	258	220	187

Gage operated Jun 27–Aug 24. Estimated Jun 1–26 (regression with BLM's Delta River at Denali Highway gage), Aug 25–Sep 23 (regression with USGS Sourdough 15200280), Sep 25–Dec 31 (measurements at gage).

Table B44. 1998 Delta River above Eureka Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	186	158	137	116	268	994	493	425	571	478	253	153
2	185	158	136	116	243	932	462	410	545	424	253	145
3	184	157	135	115	285	851	442	404	525	379	253	137
4	183	156	135	114	325	775	443	380	504	365	253	129
5	182	155	134	114	417	746	433	365	483	360	253	129
6	181	154	133	113	490	767	461	415	467	370	253	125
7	181	153	132	113	462	750	426	460	466	344	253	125
8	180	153	132	112	457	716	393	475	451	302	233	123
9	179	152	131	111	438	663	402	585	439	270	233	123
10	178	151	130	111	399	583	391	655	428	238	233	123
11	177	150	130	110	391	545	421	688	415	245	233	119
12	176	149	129	110	398	482	420	669	398	253	233	117
13	175	149	128	109	402	459	410	621	404	254	233	113
14	174	148	128	109	411	434	398	572	489	259	233	111
15	173	147	127	108	419	435	399	531	561	282	213	111
16	172	146	126	110	466	455	407	543	605	298	213	111
17	171	146	126	112	500	454	511	579	668	296	213	111
18	170	145	125	114	514	463	545	514	694	279	213	109
19	170	144	124	116	539	472	540	482	655	292	213	109
20	169	143	124	118	544	472	558	467	608	292	213	109
21	168	143	123	122	528	532	538	449	566	297	213	109
22	167	142	122	126	516	568	503	458	535	291	193	109
23	166	141	122	131	584	552	512	454	509	291	193	107
24	165	140	121	135	757	561	483	480	497	291	193	107
25	164	140	121	139	1,059	571	475	489	504	273	193	105
26	163	139	120	147	1,085	556	495	530	585	273	185	105
27	163	138	119	159	1,074	530	470	595	625	273	177	104
28	162	137	119	180	1,040	511	470	582	585	273	169	102
29	161		118	201	1,070	503	470	596	547	273	161	102
30	160		117	243	1,041	502	463	608	509	273	153	100
31	159		117		989		443	583		273		100
MEAN	172	148	127	128	584	595	461	518	528	302	217	116
MAXIMUM	186	158	137	243	1,085	994	558	688	694	478	253	153
MINIMUM	159	137	117	108	243	434	391	365	398	238	153	100

Gage operated Jun 8–Sep 10. Estimated Jan 1–Apr 14 (measurements at gage), April 16–Jun 7, Sep 11–Dec 31 (regression with USGS Sourdough 15200280).

Table B45. 1999 Delta River above Eureka Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	100	90	82	78	214	1,047	477	676	483	361	289	233
2	100	90	82	78	235	990	447	654	489	358	287	231
3	98	90	82	78	256	1,045	439	613	642	356	285	230
4	98	90	82	78	299	1,363	425	581	676	353	283	228
5	98	90	82	78	342	1,551	406	547	690	351	281	226
6	98	86	82	78	386	1,399	381	512	703	348	279	225
7	98	86	82	78	451	1,283	371	501	686	346	277	223
8	98	86	82	78	497	1,225	373	490	646	343	275	222
9	98	86	82	78	586	1,177	368	487	606	341	273	220
10	98	86	82	78	683	1,124	361	471	572	338	271	218
11	94	86	82	78	831	1,058	367	462	537	336	269	217
12	94	86	82	82	982	1,007	384	484	511	333	267	215
13	94	86	82	82	1,153	952	372	646	492	331	265	214
14	94	86	82	82	1,773	922	364	600	475	329	263	212
15	94	86	82	82	2,410	904	375	700	470	326	261	211
16	94	86	82	82	2,610	896	411	794	481	324	259	209
17	94	86	82	82	2,594	909	402	876	479	322	258	208
18	94	86	82	86	2,522	835	379	784	485	319	256	206
19	94	86	78	90	2,016	790	375	671	471	317	254	205
20	94	86	78	98	1,546	778	398	573	465	315	252	203
21	94	86	78	102	1,275	686	449	514	470	313	250	202
22	94	86	78	109	1,118	596	440	459	468	310	248	200
23	90	86	78	113	1,033	548	421	416	457	308	247	199
24	90	86	78	121	996	509	429	377	450	306	245	198
25	90	82	78	129	1,037	497	455	438	433	304	243	196
26	90	82	78	137	1,138	485	515	519	415	302	241	195
27	90	82	78	153	1,579	488	571	514	406	299	240	193
28	90	82	78	161	1,843	515	620	506	397	297	238	192
29	90		78	177	1,637	549	637	498	371	295	236	191
30	90		78	192	1,367	520	680	491	363	293	235	189
31	90		78		1,166		673	485		291		188
MEAN	94	86	80	101	1,180	888	444	559	510	325	261	210
MAXIMUM	100	90	82	192	2,610	1,551	680	876	703	361	289	233
MINIMUM	90	82	78	78	214	485	361	377	363	291	235	188

Gage operated Jun 17–Sep 29. Estimated Jan 1–Jun 16, Aug 16–25 (regression with USGS Sourdough 15200280), Sep 30–Dec 31 (measurements at gage).

Table B46. 2000 Delta River above Eureka Creek daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	186	149	121	97	97	2,696	1,910	492	413	736	555	414
2	185	148	120	96	101	2,584	1,689	461	430	729	550	410
3	184	147	120	96	105	2,447	1,502	467	432	722	544	406
4	183	146	119	95	109	2,422	1,369	473	451	715	539	402
5	181	145	118	94	113	2,558	1,224	446	432	708	534	398
6	180	144	117	94	117	2,713	1,192	436	435	701	529	394
7	179	143	116	93	121	2,906	1,062	420	435	695	523	391
8	177	142	115	93	129	3,084	1,006	408	425	688	518	387
9	176	141	115	93	136	2,959	887	389	397	681	513	383
10	175	140	114	93	144	2,388	784	353	401	675	508	379
11	174	139	113	93	152	2,108	800	342	409	668	503	376
12	172	138	112	93	160	2,019	801	331	432	662	499	372
13	171	137	111	93	172	1,813	719	342	459	655	494	368
14	170	136	110	93	180	1,690	734	407	454	649	489	365
15	169	135	110	93	188	1,659	713	345	449	642	484	361
16	167	134	109	89	199	1,659	704	339	432	636	479	358
17	166	133	108	89	219	1,599	902	351	427	630	475	354
18	165	132	107	89	238	1,599	904	360	398	624	470	351
19	164	131	107	89	258	1,759	877	357	393	618	466	347
20	163	130	106	89	277	1,682	841	346	370	612	461	344
21	162	129	105	89	297	1,458	776	337	369	606	457	341
22	160	128	104	89	316	1,341	729	334	636	600	452	337
23	159	128	104	89	335	1,270	842	329	645	594	448	334
24	158	127	103	89	335	1,200	752	337	662	588	443	331
25	157	126	102	89	355	1,124	720	345	749	583	439	328
26	156	125	101	89	424	1,049	689	334	1,085	577	435	325
27	155	124	101	93	494	996	633	337	1,234	571	431	321
28	154	123	100	93	592	1,090	644	335	1,135	566	426	318
29	153	122	99	97	1,298	1,426	595	335	954	560	422	315
30	151		98	97	2,730	1,915	552	421	807	555	418	312
31	150		98		2,791		526	401		550		309
MEAN	168	135	109	92	425	1,907	906	378	558	639	484	359
MAXIMUM	186	149	121	97	2,791	3,084	1,910	492	1,234	736	555	414
MINIMUM	150	122	98	89	97	996	526	329	369	550	418	309

Gage operated Jul 5–Sep 25. Estimated Jan 1–Apr 6 (measurements at gage), Apr 8–Jul 4, Sep 26–Dec 31 (regression with USGS Sourdough 15200280).

Table B47. 2001 Delta River above Eureka Creek daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	301	222	169	125	362	1,698	605	926	268	326	250	193
2	298	220	167	124	362	2,165	620	979	267	324	248	191
3	295	218	166	122	396	2,384	564	1,019	264	321	246	190
4	292	216	164	121	396	2,680	496	1,047	264	318	244	188
5	289	214	162	120	436	2,834	583	930	339	315	241	187
6	286	212	161	127	472	3,021	632	842	410	313	239	185
7	284	209	159	133	508	3,299	596	765	441	310	237	183
8	281	207	158	133	545	2,888	585	700	468	307	235	182
9	278	205	156	140	581	2,618	612	597	474	305	233	180
10	275	203	155	140	618	2,360	638	557	452	302	231	179
11	273	201	153	146	656	2,117	652	519	427	299	229	177
12	270	199	152	153	656	2,055	629	495	406	297	227	176
13	267	198	150	160	682	1,944	607	466	406	294	225	174
14	265	196	149	160	732	1,740	630	426	395	292	223	173
15	262	194	147	176	852	1,646	628	385	372	289	222	171
16	260	192	146	176	1,008	1,533	596	381	361	287	220	170
17	257	190	144	193	1,022	1,333	577	369	355	284	218	168
18	255	188	143	193	1,001	1,285	548	360	340	282	216	167
19	252	186	142	209	953	1,270	521	343	333	280	214	165
20	250	184	140	209	878	1,207	613	335	365	277	212	164
21	247	183	139	226	847	1,170	921	343	390	275	210	163
22	245	181	138	226	785	1,093	821	332	365	272	209	161
23	243	179	136	243	758	999	879	320	377	270	207	160
24	240	177	135	243	787	965	881	333	351	268	205	158
25	238	176	134	260	837	855	837	315	344	265	203	157
26	236	174	132	277	713	898	795	309	341	263	202	156
27	233	172	131	277	611	868	773	321	338	261	200	154
28	231	171	130	294	779	746	731	306	335	259	198	153
29	229		128	311	892	711	690	298	332	256	196	152
30	227		127	328	972	658	703	288	329	254	195	150
31	224		126		1,238		852	283		252		149
MEAN	261	195	146	191	720	1,701	671	513	364	288	221	170
MAXIMUM	301	222	169	328	1,238	3,299	921	1,047	474	326	250	193
MINIMUM	224	171	126	120	362	658	496	283	264	252	195	149

Gage operated May 27–Sep 25. Estimated Jan 1–Apr 4, Apr 6–May 26 (regression with USGS Sourdough 15200280), Sep 26–Dec 31 (measurements at gage).

Table B48. 2002 Delta River above Eureka Creek daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	148	113	89	68	64	867	386	233	732	873	674	524
2	147	112	88	68	64	738	432	214	672	866	668	520
3	145	111	87	67	64	627	413	225	613	859	663	516
4	144	110	87	67	64	535	427	252	571	852	657	511
5	143	109	86	67	64	509	370	247	518	845	652	507
6	142	109	85	64	64	549	391	263	649	838	646	503
7	140	108	85	64	68	562	354	303	789	831	641	499
8	139	107	84	64	72	493	333	441	868	824	636	495
9	138	106	83	64	75	415	313	654	893	817	630	490
10	137	105	82	64	79	395	288	802	847	810	625	486
11	136	104	82	64	83	433	316	1,863	790	803	620	482
12	135	103	81	64	87	411	297	3,321	795	797	615	478
13	133	102	80	64	92	410	263	3,879	789	790	610	474
14	132	101	80	64	96	411	247	3,216	706	783	605	470
15	131	100	79	64	100	448	246	2,156	664	777	599	467
16	130	100	78	62	105	431	287	1,406	614	770	594	463
17	129	99	78	62	113	441	343	995	563	764	590	459
18	128	98	77	62	128	445	337	769	532	758	585	455
19	127	97	76	62	144	467	269	713	493	751	580	451
20	126	96	76	62	167	509	245	834	461	745	575	447
21	125	95	75	62	191	446	231	2,230	446	739	570	444
22	123	95	74	62	216	436	228	3,925	425	733	565	440
23	122	94	74	62	250	418	205	4,074	398	727	561	436
24	121	93	73	62	318	434	252	3,476	399	721	556	433
25	120	92	72	62	449	493	329	2,420	737	715	551	429
26	119	91	72	62	583	425	276	1,732	883	709	547	426
27	118	91	71	62	727	359	252	1,305	1,092	703	542	422
28	117	90	71	62	880	371	235	1,030	1,130	697	538	418
29	116		70	64	1,005	367	228	839	999	691	533	415
30	115		69	64	1,057	353	244	751	881	685	529	412
31	114		69		958		241	790		680		408
MEAN	130	101	78	64	272	473	299	1,463	698	773	599	464
MAXIMUM	148	113	89	68	1,057	867	432	4,074	1,130	873	674	524
MINIMUM	114	90	69	62	64	353	205	214	398	680	529	408

Gage operated May 29–Sep 25. Estimated Jan 1–Apr 2, Oct 31–Dec 31 (measurements at gage), Apr 4–May 28 (regression with USGS Sourdough 15200280), Sep 26–Oct 30 (regression with BLM's Delta River at Denali Highway gage).

Table B49. 2003 Delta River above Eureka Creek daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	405	312	247	191	345	1,411	399	974	910	562	247	217
2	401	310	245	189	384	1,521	498	872	950	567	246	216
3	398	307	243	188	437	1,350	666	775	1,067	562	245	215
4	395	305	241	186	494	1,168	584	669	1,381	532	244	214
5	391	302	239	184	553	1,182	591	581	1,308	517	243	213
6	388	300	237	183	631	1,755	562	516	1,165	503	242	212
7	385	297	235	181	698	1,806	529	473	1,029	493	241	211
8	382	295	233	180	805	1,581	496	448	957	474	240	211
9	379	292	231	178	877	1,355	496	416	906	469	239	210
10	375	290	229	177	908	1,390	484	393	809	478	238	209
11	372	287	227	175	924	1,633	468	382	736	459	237	208
12	369	285	225	174	985	1,836	451	407	697	420	236	207
13	366	282	224	173	1,060	1,590	431	528	677	412	235	206
14	363	280	222	171	1,162	1,258	422	467	630	394	234	205
15	360	278	220	170	1,138	997	420	446	603	342	233	204
16	357	275	218	168	1,091	880	579	521	576	307	232	203
17	354	273	216	167	1,112	788	567	477	535	280	231	202
18	351	271	214	165	1,366	837	442	467	472	263	230	202
19	348	269	213	164	1,410	772	399	447	443	262	229	201
20	345	266	211	163	1,281	705	400	414	432	261	228	200
21	342	264	209	161	1,153	649	404	419	409	260	227	199
22	340	262	207	160	1,080	658	384	395	410	258	226	198
23	337	260	206	171	1,038	674	344	376	410	257	225	197
24	334	258	204	186	1,023	669	328	377	393	256	224	196
25	331	256	202	198	1,077	589	322	384	399	255	223	196
26	328	253	201	214	1,188	521	359	447	409	254	222	195
27	326	251	199	233	1,306	463	633	655	391	253	221	194
28	323	249	197	255	1,293	422	1,193	599	387	252	220	193
29	320		196	280	1,226	420	841	636	435	251	219	192
30	318		194	307	1,210	405	962	660	493	250	218	191
31	315		192		1,236		1,062	844		248		190
MEAN	358	280	219	190	984	1,043	539	531	681	366	232	204
MAXIMUM	405	312	247	307	1,410	1,836	1,193	974	1,381	567	247	217
MINIMUM	315	249	192	160	345	405	322	376	387	248	218	190

Gage operated Jun 2–Sep 29. Estimated Jan 1–Apr 21, Oct 15–Dec 31 (measurements at gage), Apr 23–Jun 1, Sep 30–Oct 14 (regression with USGS Sourdough 15200280).

Table B50. 2004 Delta River above Eureka Creek daily mean discharge (cfs).

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	190	166	146	128	407	1,127	373	201	172	265	229	199
2	189	165	145	127	522	1,171	394	197	178	263	228	198
3	188	164	145	126	809	1,824	375	193	191	262	227	197
4	187	164	144	126	1,103	1,981	337	202	214	261	226	196
5	186	163	143	125	1,505	1,631	319	218	225	260	225	195
6	186	162	143	125	2,300	1,364	292	231	216	258	223	194
7	185	161	142	124	2,483	1,204	298	240	206	257	222	193
8	184	161	142	124	2,873	1,321	351	230	194	256	221	192
9	183	160	141	123	3,015	1,396	319	234	185	255	220	191
10	182	159	140	123	3,156	1,297	292	236	179	254	219	190
11	182	159	140	122	2,681	1,155	296	229	176	252	218	190
12	181	158	139	122	2,349	910	318	238	173	251	217	189
13	180	157	139	121	2,261	766	339	227	183	250	216	188
14	179	157	138	121	2,049	672	336	234	184	249	215	187
15	178	156	137	120	1,862	599	314	267	185	248	214	186
16	178	155	137	122	1,705	562	313	279	181	247	213	185
17	177	155	136	123	1,544	497	301	283	184	245	212	184
18	176	154	136	127	1,394	480	273	280	180	244	211	183
19	175	153	135	130	1,212	487	278	292	171	243	210	183
20	175	153	134	133	1,106	476	288	270	180	242	209	182
21	174	152	134	137	974	463	287	251	191	241	208	181
22	173	151	133	147	892	469	236	250	202	240	207	180
23	172	151	133	164	833	436	194	226	219	239	206	179
24	172	150	132	181	842	446	186	210	242	238	205	178
25	171	149	132	195	983	457	192	182	260	236	204	178
26	170	149	131	212	1,212	509	164	154	260	235	203	177
27	169	148	130	233	1,212	514	202	166	285	234	202	176
28	169	147	130	264	1,328	545	212	171	307	233	202	175
29	168	147	129	295	1,408	590	194	177	288	232	201	174
30	167		129	337	1,296	490	189	176	266	231	200	173
31	166		128		1,194		199	174		230		173
MEAN	178	156	137	155	1,565	861	279	223	209	247	214	185
MAXIMUM	190	166	146	337	3,156	1,981	394	292	307	265	229	199
MINIMUM	166	147	128	120	407	436	164	154	171	230	200	173

Gage operated Jun 8–Aug 26. Estimated Jan 1–Apr 14, Oct 1–Dec 31 (measurements at gage), Apr 16–Jun 7, Aug 27–Sep 30 (regression with USGS Sourdough 15200280).

Table B51. 2005 Delta River above Eureka Creek daily mean discharge (cfs).

Day	JAN	FEB	MAR
1	172	149	130
2	171	148	130
3	170	147	129
4	169	146	128
5	169	146	128
6	168	145	127
7	167	144	127
8	166	144	126
9	165	143	125
10	165	142	125
11	164	142	124
12	163	141	124
13	162	140	123
14	162	140	123
15	161	139	122
16	160	138	121
17	159	138	121
18	159	137	120
19	158	136	120
20	157	136	119
21	156	135	119
22	156	135	118
23	155	134	117
24	154	133	117
25	153	133	116
26	153	132	116
27	152	131	115
28	151	131	115
29	151		114
30	150		114
31	149		113
MEAN	160	140	121
MAXIMUM	172	149	130
MINIMUM	149	131	113

Estimated Jan 1–Mar 31 (measurements at gage).

Table B52. 2008 Delta River below Black Rapids daily mean discharge (cfs).

Day	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2,354	5,091	9,615	3,449	2,776	1,728	1,092
2	3,225	5,907	9,568	3,279	2,734	1,702	1,076
3	3,735	7,086	8,739	3,352	2,693	1,676	1,059
4	3,197	8,515	8,474	3,309	2,652	1,651	1,043
5	2,914	8,886	7,422	3,113	2,612	1,626	1,027
6	3,357	9,227	6,327	3,647	2,572	1,601	1,012
7	4,855	8,624	5,416	3,940	2,533	1,577	996
8	5,351	8,558	5,137	4,459	2,495	1,553	981
9	5,605	8,476	5,510	4,320	2,457	1,529	966
10	5,744	8,339	5,364	4,578	2,419	1,506	952
11	6,158	8,466	5,209	4,578	2,383	1,483	937
12	6,886	8,808	5,339	4,904	2,346	1,460	923
13	7,232	8,674	5,723	5,201	2,311	1,438	909
14	7,034	8,267	6,314	5,016	2,276	1,416	895
15	7,139	8,756	6,321	5,194	2,241	1,395	882
16	7,300	9,941	6,275	4,081	2,207	1,374	868
17	7,590	10,174	6,449	4,887	2,174	1,353	855
18	7,694	8,302	6,432	5,279	2,141	1,332	842
19	8,079	8,053	6,141	4,399	2,108	1,312	829
20	8,867	7,614	5,676	4,096	2,076	1,292	817
21	8,903	8,050	5,704	3,994	2,045	1,273	804
22	8,171	9,332	6,090	3,498	2,014	1,253	792
23	8,579	8,901	5,754	3,138	1,983	1,234	780
24	8,187	8,340	5,034	3,090	1,953	1,216	768
25	7,832	8,510	4,454	3,043	1,923	1,197	757
26	7,965	8,492	4,612	2,997	1,894	1,179	745
27	6,743	10,268	4,496	2,952	1,865	1,161	734
28	6,106	10,892	4,300	2,907	1,837	1,143	723
29	5,446	10,042	3,810	2,863	1,809	1,126	712
30	4,884	9,292	3,567	2,819	1,782	1,109	701
31		9,031	3,449		1,755		690
MEAN	6,238	8,610	5,894	3,879	2,228	1,397	876
MAXIMUM	8,903	10,892	9,615	5,279	2,776	1,728	1,092
MINIMUM	2,354	5,091	3,449	2,819	1,755	1,109	690

Gage operated Jun 4–Sep 23. Estimated Jun 1–3 (regression with USGS Phelan Creek 15478040) Sep 24–Dec 31 (measurements at gage).

Table B53. 2009 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	680	423	276	172	842	4,282	6,495	10,007	6,370	1,777	1,200	820
2	670	417	272	169	1,162	6,052	7,455	8,215	5,616	1,755	1,184	810
3	660	411	267	166	1,488	6,598	8,213	8,452	4,473	1,733	1,170	799
4	650	404	263	164	1,619	7,399	8,737	9,066	4,592	1,711	1,155	789
5	640	398	259	161	1,488	8,617	9,306	9,633	4,747	1,689	1,140	779
6	630	392	255	161	906	8,692	10,050	10,063	4,899	1,668	1,126	770
7	621	386	252	161	954	8,974	11,015	8,249	4,515	1,647	1,112	760
8	611	380	248	161	1,145	8,968	12,162	8,633	4,249	1,626	1,098	750
9	602	375	244	161	1,557	9,153	13,310	8,962	4,152	1,606	1,084	741
10	593	369	240	161	1,684	9,578	12,019	7,425	4,059	1,585	1,070	732
11	584	363	237	161	1,811	9,565	11,741	5,485	4,152	1,565	1,057	722
12	575	358	233	161	1,939	9,791	11,530	4,155	3,996	1,546	1,043	713
13	566	352	230	161	2,067	9,335	11,652	4,326	3,679	1,526	1,030	704
14	558	347	226	161	2,196	8,493	12,328	5,656	3,598	1,507	1,017	695
15	549	342	223	161	2,325	8,877	12,250	9,037	3,517	1,488	1,004	687
16	541	336	219	167	2,454	9,052	10,903	12,628	3,436	1,469	992	678
17	533	331	216	172	2,714	8,962	10,409	12,721	3,355	1,451	979	669
18	524	326	213	189	2,975	9,264	10,098	9,796	3,153	1,433	967	661
19	517	321	209	207	3,369	8,755	9,657	8,924	2,951	1,414	955	653
20	509	317	206	224	3,766	8,743	8,599	7,022	2,750	1,397	943	644
21	501	312	203	242	3,701	8,647	8,540	5,904	2,548	1,379	931	636
22	493	307	200	259	4,526	7,253	8,624	5,461	2,346	1,362	919	628
23	486	302	197	277	5,315	7,549	7,595	5,584	2,144	1,345	908	620
24	478	298	194	294	6,076	6,187	6,212	5,332	1,942	1,328	896	613
25	471	293	191	326	7,175	5,322	6,251	4,617	1,918	1,311	885	605
26	464	289	188	357	7,532	5,004	7,385	4,310	1,893	1,294	874	597
27	457	284	185	420	8,024	4,944	8,042	5,894	1,870	1,278	863	590
28	450	280	182	484	7,389	5,533	9,067	6,218	1,846	1,262	852	582
29	443		180	548	4,845	5,141	11,251	7,858	1,823	1,246	841	575
30	436		177	612	4,364	5,604	12,143	6,333	1,800	1,230	830	568
31	430		174		3,869		13,469	6,043		1,215		561
MEAN	546	347	221	241	3,267	7,678	9,887	7,484	3,413	1,479	1,004	682
MAXIMUM	680	423	276	612	8,024	9,791	13,469	12,721	6,370	1,777	1,200	820
MINIMUM	430	280	174	161	842	4,282	6,212	4,155	1,800	1,215	830	561

Gage operated Jun 2–Sep 24. Estimated Jan 1–Apr 15 (measurements at gage), Apr 16–Jun 1, Sep 9–23, Sep 25–Dec 31 (regression with USGS Phelan Creek 15478040). Transducer out of water Sep 9–24.

Table B54. 2010 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	554	374	262	177	516	6,547	9,681	9,926	4,887	1,466	1,067	785
2	547	369	259	175	548	7,505	9,499	10,900	4,763	1,451	1,056	777
3	540	364	255	172	606	7,147	9,747	10,954	4,410	1,436	1,046	769
4	533	360	252	170	677	5,957	10,627	12,022	4,262	1,422	1,035	761
5	526	355	249	168	742	5,545	10,369	13,704	4,829	1,407	1,024	753
6	520	351	246	166	612	5,876	9,168	11,918	5,073	1,393	1,014	746
7	513	346	243	164	677	6,254	8,540	9,707	5,736	1,379	1,004	738
8	507	342	240	162	873	6,992	8,419	8,710	6,064	1,365	993	731
9	500	338	237	160	873	6,494	9,510	9,670	6,894	1,351	983	723
10	494	333	234	158	873	6,369	9,592	9,868	6,726	1,337	973	716
11	488	329	231	156	742	6,134	10,076	9,865	6,494	1,323	963	709
12	481	325	228	156	677	6,563	10,233	8,181	6,361	1,310	954	701
13	475	321	225	156	808	5,947	11,187	7,731	5,903	1,296	944	694
14	469	317	222	156	808	5,484	9,661	9,142	5,848	1,283	934	687
15	464	313	219	156	808	5,656	9,968	10,571	6,200	1,270	925	680
16	458	309	217	156	742	5,621	9,417	11,652	6,307	1,257	915	673
17	452	305	214	172	939	5,448	9,054	11,444	6,254	1,244	906	666
18	446	301	211	178	2,449	5,598	9,128	8,705	5,848	1,232	897	660
19	441	297	209	184	5,322	5,699	9,998	7,490	5,238	1,219	888	653
20	435	294	206	184	4,867	5,770	9,940	6,251	4,954	1,207	879	646
21	430	290	203	190	4,723	6,199	10,414	6,261	4,781	1,194	870	640
22	424	286	201	184	5,096	6,427	10,480	6,589	4,311	1,182	861	633
23	419	283	198	184	5,266	6,909	10,635	6,599	2,923	1,170	852	627
24	414	279	196	178	5,766	7,592	11,132	6,061	2,134	1,158	843	620
25	408	276	193	190	6,467	8,249	9,796	5,983	1,924	1,147	835	614
26	403	272	191	233	6,307	8,430	9,862	5,292	2,148	1,135	826	608
27	398	269	188	388	6,520	9,003	10,389	5,478	1,772	1,123	818	601
28	393	265	186	484	6,547	9,278	9,242	6,025	1,400	1,112	809	595
29	388		184	612	6,520	9,701	8,764	5,559	1,106	1,101	801	589
30	383		181	677	6,547	9,576	8,726	5,126	1,033	1,089	793	583
31	378		179		6,783		9,358	5,023		1,078		577
MEAN	461	317	218	221	2,958	6,799	9,762	8,465	4,553	1,263	924	676
MAXIMUM	554	374	262	677	6,783	9,701	11,187	13,704	6,894	1,466	1,067	785
MINIMUM	378	265	179	156	516	5,448	8,419	5,023	1,033	1,078	793	577

Gage operated Jun 10–Oct 1. Estimated Jan 1–Jun 9, Sep 11–30 (regression with USGS Phelan Creek 15478040), Oct 2–Dec 31 (measurements at gage). Data logger not working Sep 11–Oct 1.

Table B55. 2011 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	573	418	314	229	233	9,191	10,663	11,860	6,038	1,342	975	716
2	567	413	311	226	241	9,710	10,874	11,578	5,808	1,328	965	708
3	561	409	307	224	241	9,408	9,964	11,345	4,675	1,315	955	701
4	556	405	304	222	250	8,703	10,045	10,530	3,823	1,301	945	694
5	550	401	301	219	250	7,245	9,636	10,716	3,938	1,288	936	687
6	545	397	298	217	258	6,996	10,663	8,220	3,550	1,275	926	680
7	539	393	295	215	258	7,257	10,742	6,959	2,810	1,262	917	673
8	534	389	292	213	274	7,234	10,742	5,939	3,310	1,249	907	666
9	528	385	289	213	274	6,912	10,369	6,168	2,938	1,236	898	659
10	523	381	286	212	290	6,636	10,716	5,474	2,547	1,223	889	652
11	517	377	283	212	290	6,684	10,530	5,907	2,680	1,211	880	646
12	512	373	280	212	315	6,381	11,500	6,361	3,188	1,198	871	639
13	507	369	278	212	315	6,323	11,449	6,168	4,275	1,186	862	633
14	502	366	275	211	339	6,215	11,809	6,709	4,014	1,174	853	626
15	497	362	272	211	339	6,080	11,783	6,990	2,853	1,162	844	620
16	492	358	269	211	380	6,043	12,643	8,044	2,115	1,150	835	613
17	487	355	266	211	422	6,615	11,319	7,688	2,003	1,138	827	607
18	482	351	264	210	480	7,304	12,543	7,956	1,903	1,126	818	601
19	477	347	261	210	588	7,377	10,689	7,418	1,821	1,115	810	595
20	472	344	258	210	816	7,663	10,396	9,051	1,743	1,103	802	589
21	467	340	256	210	1,157	7,833	11,215	9,135	1,719	1,092	793	582
22	462	337	253	211	1,677	7,775	11,552	7,808	1,707	1,081	785	576
23	458	334	251	211	2,086	8,265	11,860	7,837	1,737	1,070	777	571
24	453	330	248	212	2,895	7,771	11,319	7,508	1,717	1,059	769	565
25	449	327	246	213	3,707	9,243	10,636	7,020	1,625	1,048	761	559
26	444	323	243	215	4,639	11,564	11,604	6,552	1,519	1,037	754	553
27	439	320	241	216	5,575	10,943	11,084	5,741	1,446	1,027	746	548
28	435	317	238	219	6,135	10,436	11,032	6,038	1,398	1,016	738	542
29	431		236	222	6,646	6,646	11,397	6,456	1,370	1,006	731	536
30	426		233	225	8,796	8,796	12,013	6,520	1,356	995	723	531
31	422		231		10,369		9,359	6,296		985		525
MEAN	494	365	270	215	1,953	7,842	11,037	7,677	2,721	1,155	843	616
MAXIMUM	573	418	314	229	10,369	11,564	12,643	11,860	6,038	1,342	975	716
MINIMUM	422	317	231	210	233	6,043	9,359	5,474	1,356	985	723	525

Gage operated Jun 14–Sep 26. Estimated Jan 1–Apr 30, Sep 17–18, Sep 25, Sep 27–Dec 31 (measurements at gage), May 1–Jun 13 (regression with USGS Phelan Creek 15478040).

Table B56. 2012 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	520	378	280	204	243	1,841	9,161	8,028	4,225	3,083	1,883	1,172
2	515	374	277	202	243	1,982	10,539	9,835	4,402	2,878	1,854	1,153
3	509	370	275	200	244	3,244	10,312	9,618	4,205	2,898	1,825	1,135
4	504	366	272	200	244	3,935	9,187	6,822	4,987	2,932	1,796	1,118
5	499	363	269	200	245	5,315	7,690	6,185	4,494	2,886	1,768	1,100
6	494	359	266	200	246	6,695	7,683	6,371	3,847	2,841	1,740	1,083
7	489	355	263	200	246	8,074	8,083	6,730	3,032	2,797	1,713	1,066
8	484	352	261	200	247	10,326	8,387	6,844	2,548	2,753	1,686	1,049
9	479	348	258	200	247	12,149	6,607	6,799	2,321	2,709	1,659	1,033
10	474	344	255	200	248	10,688	6,935	7,332	2,153	2,667	1,633	1,016
11	469	341	253	200	249	12,893	6,154	7,561	1,993	2,625	1,608	1,000
12	464	337	250	200	249	12,959	5,560	7,533	1,875	2,584	1,583	985
13	460	334	248	200	250	11,204	5,880	7,572	1,847	2,543	1,558	969
14	455	330	245	200	250	9,462	6,343	7,831	1,824	2,503	1,533	954
15	450	327	243	200	251	8,776	6,608	7,878	2,357	2,464	1,509	939
16	446	324	240	200	252	8,321	6,202	7,890	5,636	2,426	1,486	924
17	441	320	238	200	252	7,620	6,426	7,220	6,630	2,387	1,462	910
18	436	317	235	200	253	8,141	6,699	6,132	4,450	2,350	1,439	896
19	432	314	233	200	254	9,317	7,121	7,056	4,514	2,313	1,417	882
20	428	311	230	200	254	10,165	9,276	5,991	11,847	2,277	1,394	868
21	423	307	228	200	255	11,198	11,032	5,489	14,151	2,241	1,373	854
22	419	304	226	200	255	11,937	13,611	5,028	11,410	2,206	1,351	841
23	415	301	223	200	256	12,501	13,762	5,170	8,617	2,171	1,330	827
24	410	298	221	200	257	12,574	12,263	4,586	6,117	2,137	1,309	815
25	406	295	219	200	258	11,152	11,053	4,626	4,684	2,104	1,288	802
26	402	292	217	200	273	10,920	10,739	4,861	4,385	2,071	1,268	789
27	398	289	214	200	304	9,418	10,621	7,271	4,055	2,038	1,248	777
28	394	286	212	210	319	8,748	10,737	5,455	3,950	2,006	1,229	765
29	390	283	210	221	335	8,049	11,109	3,792	3,466	1,975	1,209	753
30	386		208	232	365	8,675	9,615	3,910	3,185	1,944	1,191	741
31	382		206		410		8,283	4,043		1,913		729
MEAN	447	328	241	202	266	8,943	8,828	6,499	4,774	2,443	1,511	934
MAXIMUM	520	378	280	232	410	12,959	13,762	9,835	14,151	3,083	1,883	1,172
MINIMUM	382	283	206	200	243	1,841	5,560	3,792	1,824	1,913	1,191	729

Gage operated Jun 7–Oct 4. Estimated Jan 1–Apr 15, Oct 5–Dec 31 (measurements at gage), Apr 16–Jun 6 (regression with USGS Phelan Creek 15478040).

Table B57. 2013 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	718	440	282	220	220	3,750	11,696	10,433	4,547	2,495	1,304	696
2	706	433	278	220	221	3,836	9,977	10,200	6,474	2,443	1,277	681
3	695	426	274	220	222	3,662	8,449	9,263	11,438	2,392	1,250	667
4	684	419	269	220	222	3,390	8,075	8,800	10,982	2,343	1,225	654
5	674	413	265	220	223	3,573	7,791	7,931	9,769	2,294	1,199	640
6	663	406	261	220	224	4,004	7,409	7,905	7,849	2,247	1,174	627
7	653	400	257	220	225	5,199	7,643	8,279	9,973	2,200	1,150	614
8	642	393	253	220	226	6,657	8,011	7,944	8,796	2,155	1,126	601
9	632	387	249	220	227	7,606	7,695	7,708	8,397	2,110	1,103	589
10	622	381	245	220	227	8,160	7,506	10,126	7,732	2,066	1,080	576
11	613	375	241	220	228	8,061	7,089	10,832	8,382	2,024	1,058	574
12	603	369	237	220	229	8,993	7,674	9,772	8,249	1,982	1,036	572
13	594	364	234	220	230	9,924	8,002	9,884	6,384	1,941	1,014	570
14	584	358	230	220	231	10,856	8,670	9,428	5,220	1,900	993	568
15	575	352	228	220	232	11,607	9,415	8,482	4,713	1,861	973	566
16	566	347	226	220	233	12,271	9,821	8,439	4,145	1,823	953	564
17	557	341	224	220	234	15,280	10,499	8,035	3,700	1,785	933	562
18	548	336	222	220	235	15,263	9,797	9,593	3,500	1,748	914	559
19	540	331	220	220	235	14,112	10,434	8,458	4,215	1,712	895	557
20	531	325	220	220	236	13,049	11,477	11,924	6,400	1,676	876	555
21	523	320	220	220	237	12,862	9,990	11,906	5,961	1,641	858	553
22	515	315	220	220	238	11,812	9,175	8,695	7,556	1,607	840	551
23	507	310	220	220	239	10,543	9,396	9,530	5,441	1,574	823	549
24	499	306	220	220	240	10,446	9,635	8,646	4,328	1,542	806	547
25	491	301	220	220	549	11,808	9,667	6,804	3,500	1,510	789	545
26	483	296	220	220	753	13,756	9,052	5,629	2,770	1,478	773	543
27	476	291	220	220	1,143	15,043	9,318	5,143	2,713	1,448	757	541
28	468	287	220	220	1,394	16,128	10,019	5,590	2,656	1,418	741	539
29	461		220	220	1,760	14,085	10,273	6,982	2,601	1,388	726	537
30	454		220	220	3,051	13,371	10,553	6,076	2,548	1,360	711	535
31	447		220		3,390		10,602	5,446		1,331		533
MEAN	572	358	236	220	566	9,970	9,187	8,512	6,031	1,855	978	580
MAXIMUM	718	440	282	220	3,390	16,128	11,696	11,924	11,438	2,495	1,304	696
MINIMUM	447	287	220	220	220	3,390	7,089	5,143	2,548	1,331	711	533

Gage operated Jun 14–Sep 26. Estimated Jan 1–Apr 30, Sep 17–18, Sep 25, Sep 27–Dec 31 (measurements at gage), May 1–Jun 13 (regression with USGS Phelan Creek 15478040).

Table B58. 2014 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	531	473	426	396	396	3,064	8,487	7,555	3,301	1,892	1,053	606
2	529	471	424	396	396	2,792	8,623	7,609	3,197	1,830	1,034	595
3	527	469	423	396	397	3,171	8,674	7,436	3,126	1,797	1,015	584
4	525	468	421	396	398	3,902	8,988	7,553	2,799	1,764	997	574
5	523	466	420	396	399	4,816	9,837	7,841	2,801	1,732	979	563
6	521	464	418	396	399	5,730	11,037	7,411	2,944	1,700	961	553
7	519	462	416	396	400	6,306	11,761	7,199	2,715	1,669	943	543
8	517	461	415	396	401	6,690	10,682	6,871	2,646	1,639	926	533
9	515	459	413	396	401	6,876	10,853	6,434	2,633	1,609	909	523
10	513	457	412	396	402	6,934	10,872	6,726	3,185	1,579	893	514
11	511	456	410	396	403	6,785	11,945	7,451	3,134	1,551	876	631
12	510	454	409	396	404	6,765	11,728	7,507	3,324	1,522	860	628
13	508	452	407	396	405	6,746	11,297	7,213	4,443	1,495	845	625
14	506	450	406	396	406	6,726	10,103	7,359	6,043	1,467	829	622
15	504	449	404	396	407	7,467	8,930	7,855	7,351	1,441	814	619
16	502	447	402	396	409	7,698	8,370	7,972	6,856	1,414	799	617
17	500	445	400	396	412	7,384	8,394	7,520	5,765	1,388	785	614
18	498	444	398	396	416	7,095	8,552	7,307	5,012	1,363	770	611
19	496	442	396	396	420	6,784	8,403	6,852	4,459	1,338	756	608
20	495	440	396	396	424	6,286	9,047	6,292	4,832	1,314	743	606
21	493	439	396	396	430	6,801	7,824	5,941	3,978	1,290	729	603
22	491	437	396	396	436	6,621	7,778	5,859	3,183	1,266	716	600
23	489	436	396	396	441	6,496	8,071	5,571	2,835	1,243	703	598
24	487	434	396	396	448	6,533	7,569	5,232	2,608	1,221	690	595
25	485	432	396	396	1,453	6,925	7,988	5,605	2,420	1,198	677	592
26	484	431	396	396	2,459	7,224	6,880	6,320	2,357	1,176	665	590
27	482	429	396	396	2,792	6,686	6,184	5,581	2,326	1,155	653	587
28	480	427	396	396	2,626	6,620	5,909	5,993	2,145	1,134	641	584
29	478		396	396	3,277	6,742	6,426	6,161	2,021	1,113	629	582
30	476		396	396	3,850	7,386	7,159	4,789	1,908	1,093	618	579
31	475		396		3,799		7,200	3,793		1,073		577
MEAN	502	450	405	396	971	6,268	8,889	6,671	3,545	1,433	817	589
MAXIMUM	531	473	426	396	3,850	7,698	11,945	7,972	7,351	1,864	1,053	631
MINIMUM	475	427	396	396	396	2,792	5,909	3,793	1,908	1,073	618	514

Gage operated Jun 6–Oct 1. Estimated Jan 1–Apr 30, Oct 2–Dec 31 (measurements at gage), May 1–Jun 5 (regression with USGS Phelan Creek 15478040).

Table B59. 2015 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	574	500	441	420	454	6,387	7,992	7,768	2,491	4,316	1,938	893
2	571	498	439	420	454	5,270	6,804	7,714	2,339	4,206	1,889	870
3	569	495	437	420	454	5,763	6,255	7,904	2,378	4,099	1,840	848
4	566	493	435	420	454	5,168	6,777	8,720	2,669	3,994	1,794	826
5	564	491	433	420	454	4,755	7,644	9,668	2,741	3,892	1,748	805
6	561	489	431	420	454	4,185	9,109	9,306	2,780	3,793	1,703	785
7	559	487	429	420	495	3,824	10,299	7,762	2,764	3,696	1,660	765
8	556	484	427	420	495	3,668	10,077	7,801	2,905	3,602	1,617	745
9	554	482	426	420	495	3,248	9,165	8,202	3,680	3,510	1,576	726
10	551	480	424	420	495	3,060	8,687	10,198	3,815	3,421	1,536	708
11	549	478	422	420	495	3,121	8,588	7,496	3,273	3,334	1,497	794
12	547	476	420	420	535	3,214	8,511	5,296	2,889	3,249	1,459	788
13	544	474	420	420	535	3,307	9,021	4,813	2,474	3,166	1,422	781
14	542	472	420	420	611	3,400	8,861	4,980	2,535	3,085	1,385	775
15	539	470	420	420	611	4,295	7,785	5,576	2,435	3,006	1,350	768
16	537	467	420	420	684	5,702	7,764	6,425	2,494	2,930	1,316	762
17	534	465	420	420	754	7,018	10,454	7,011	2,788	2,855	1,282	756
18	532	463	420	420	887	7,194	9,955	7,631	2,596	2,782	1,249	750
19	530	461	420	420	1,014	7,250	7,850	6,908	2,445	2,711	1,217	743
20	527	459	420	420	1,472	7,722	7,414	5,865	2,381	2,642	1,186	737
21	525	457	420	420	2,980	8,190	7,059	5,143	2,334	2,575	1,156	731
22	523	455	420	420	4,140	8,211	7,558	4,952	2,156	2,509	1,127	725
23	520	453	420	420	5,017	8,706	8,119	4,450	2,028	2,445	1,098	719
24	518	451	420	420	5,577	8,897	8,561	3,868	1,904	2,383	1,070	714
25	516	449	420	420	5,305	9,704	8,720	3,914	1,678	2,322	1,043	708
26	513	447	420	420	4,709	9,731	8,352	5,312	1,606	2,263	1,016	702
27	511	445	420	420	5,379	11,114	7,611	7,470	1,678	2,205	990	696
28	509	443	420	420	5,934	9,049	7,912	5,660	2,993	2,149	965	690
29	507		420	437	6,331	8,323	7,973	4,095	5,010	2,094	940	685
30	504		420	437	6,600	8,289	7,956	3,304	4,429	2,041	916	679
31	502		420		6,890		8,092	2,778		1,989		674
MEAN	537	471	424	421	2,296	6,259	8,288	6,387	2,690	3,008	1,366	753
MAXIMUM	574	500	441	437	6,890	11,114	10,454	10,198	5,010	4,316	1,938	893
MINIMUM	502	443	420	420	454	3,060	6,255	2,778	1,606	1,989	916	674

Gage operated Jun 4–Sep 24. Estimated Jan 1–Apr 30, Oct 1–Dec 31 (measurements at gage), May 1–Jun 3, Sep 25–30 (regression with USGS Phelan Creek 15478040).

Table B60. 2016 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	668	518	408	385	425	7,160	9,807	9,629	5,096	2,286	1,422	898
2	663	513	404	385	425	7,337	9,795	9,537	4,991	2,251	1,400	885
3	657	509	401	385	425	7,712	9,670	9,241	4,802	2,217	1,379	871
4	652	505	398	385	425	7,730	9,867	9,285	4,698	2,183	1,358	858
5	646	501	395	385	425	8,735	10,330	9,420	4,622	2,150	1,338	845
6	641	497	391	385	425	8,058	10,411	10,462	4,762	2,117	1,317	832
7	636	493	388	385	425	7,627	10,084	12,503	4,128	2,085	1,297	819
8	631	489	385	385	463	7,289	9,992	14,657	3,650	2,054	1,277	807
9	626	485	385	385	500	7,313	10,563	12,881	3,527	2,022	1,258	795
10	620	481	385	385	500	7,505	10,778	10,526	3,058	1,992	1,239	783
11	615	477	385	385	500	7,601	10,870	9,161	2,841	1,961	1,220	771
12	610	473	385	385	536	7,088	11,247	9,882	5,787	1,932	1,202	759
13	605	469	385	385	572	6,945	12,394	13,435	7,806	1,902	1,183	747
14	600	465	385	385	2,687	6,993	12,688	11,343	6,363	1,873	1,165	736
15	595	461	385	385	3,927	6,832	12,743	9,435	5,116	1,845	1,148	725
16	591	458	385	385	4,843	7,226	12,300	8,625	4,765	1,817	1,130	714
17	586	454	385	385	5,325	8,281	11,183	8,546	4,411	1,789	1,113	693
18	581	450	385	385	4,432	9,288	10,449	7,722	3,703	1,762	1,096	672
19	576	446	385	385	4,454	9,696	9,759	7,377	3,207	1,735	1,079	652
20	571	443	385	385	4,566	9,376	9,941	6,962	3,014	1,709	1,063	632
21	567	439	385	425	5,178	8,969	9,958	7,154	3,013	1,683	1,047	613
22	562	436	385	425	6,117	9,119	10,102	8,531	4,274	1,657	1,031	595
23	557	432	385	425	6,372	9,024	9,513	9,468	3,864	1,632	1,015	577
24	553	428	385	425	5,988	9,289	9,653	9,774	3,331	1,607	1,000	560
25	548	425	385	425	5,145	9,575	11,641	10,248	3,095	1,583	985	543
26	544	421	385	425	5,117	9,672	10,355	10,272	2,898	1,559	970	527
27	539	418	385	425	5,315	9,271	10,616	9,425	2,558	1,535	955	511
28	535	415	385	425	5,472	9,557	10,153	9,370	2,385	1,512	940	496
29	531	411	385	425	6,645	9,319	11,079	7,762	2,406	1,489	926	481
30	526		385	425	7,210	8,980	11,703	6,228	2,321	1,466	912	467
31	522		385		7,112		10,541	5,402		1,444		453
MEAN	592	462	388	398	3,289	8,286	10,651	9,492	4,016	1,834	1,149	688
MAXIMUM	668	518	408	425	7,210	9,696	12,743	14,657	7,806	2,286	1,422	898
MINIMUM	522	411	385	385	425	6,832	9,513	5,402	2,321	1,444	912	453

Gage operated May 26–Sep 29. Estimated Jan 1–Apr 20, Sep 30–Dec 31 (measurements at gage), Apr 21–May 25 (regression with USGS Phelan Creek 15478040).

Table B61. 2017 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	439	171	73	44	54	2,223	6,751	9,320	5,754	1,808	1,072	705
2	426	166	71	45	67	2,489	7,740	9,267	3,962	1,863	1,055	697
3	413	161	69	45	81	2,807	7,423	11,869	3,097	1,960	1,039	690
4	401	156	67	45	98	3,211	7,929	11,561	2,856	3,395	1,023	683
5	389	152	65	45	116	3,639	9,134	10,115	3,140	2,582	1,007	676
6	377	147	63	46	143	3,309	10,101	11,381	3,934	2,055	991	668
7	366	143	61	46	179	3,928	10,803	11,325	3,576	1,808	976	661
8	355	138	59	46	218	4,442	10,443	10,354	3,187	1,726	960	655
9	344	134	57	46	274	5,928	11,404	9,633	2,949	1,590	945	648
10	334	130	56	47	364	9,350	9,410	9,188	2,894	1,515	931	641
11	324	126	54	47	454	10,394	9,282	7,854	2,729	1,491	916	634
12	314	123	52	47	541	8,022	9,886	8,138	2,615	1,468	902	628
13	305	119	51	47	633	7,279	11,483	9,922	2,577	1,445	888	621
14	296	115	49	48	749	5,746	11,198	8,212	2,590	1,422	874	614
15	287	112	48	48	948	4,778	11,151	6,680	2,605	1,400	860	608
16	278	109	46	48	1,438	4,577	10,161	5,622	2,575	1,378	847	602
17	270	105	45	48	1,461	4,663	10,340	4,397	2,508	1,357	834	595
18	262	102	44	48	1,045	4,889	9,969	3,344	2,355	1,336	821	589
19	254	99	44	48	957	4,763	8,896	3,272	2,323	1,315	808	583
20	247	96	44	48	912	5,753	8,266	3,470	2,254	1,294	795	577
21	239	93	44	48	1,246	6,857	8,938	3,237	2,235	1,274	783	571
22	232	90	44	48	1,386	7,148	8,583	3,356	2,465	1,254	775	565
23	225	88	44	48	1,218	7,538	9,592	4,101	3,177	1,235	767	559
24	218	85	44	48	1,161	7,677	10,714	5,320	2,924	1,216	759	553
25	212	83	44	51	1,066	7,625	9,084	4,523	2,824	1,197	751	547
26	205	80	44	51	905	7,209	8,600	4,374	2,668	1,178	743	541
27	199	78	44	53	859	7,440	9,293	4,964	2,954	1,160	735	536
28	193	75	44	53	990	7,425	9,400	4,591	2,861	1,142	727	530
29	188		44	54	1,513	6,754	8,934	4,420	2,251	1,124	720	525
30	182		44	54	1,480	6,967	9,685	6,010	1,917	1,106	712	519
31	177		44		1,936		9,999	5,858		1,089		514
MEAN	289	117	52	48	790	5,828	9,503	6,957	2,892	1,522	867	604
MAXIMUM	439	171	73	54	1,936	10,394	11,483	11,869	5,754	3,395	1,072	705
MINIMUM	177	75	44	44	54	2,223	6,751	3,237	1,917	1,089	712	514

Gage operated May 31–Sep 26. Estimated Jan 1–Apr 30, Nov 22–Dec 31 (measurements at gage), Mar 18–May 30, Sep 27–Nov 21 (regression with USGS Phelan Creek 15478040).

Table B62. 2018 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	508	367	273	206	191	2,920	9,447	11,362	3,820	2,164	1,290	782
2	503	363	270	205	194	3,508	9,571	11,201	3,397	2,129	1,269	769
3	498	359	267	196	193	4,475	9,936	9,609	3,149	2,093	1,248	756
4	492	355	264	197	195	5,607	10,192	10,202	3,028	2,059	1,227	744
5	487	351	262	201	197	7,580	9,841	13,453	2,938	2,025	1,207	732
6	482	348	259	198	194	8,196	9,446	19,691	2,981	1,991	1,187	720
7	477	344	256	206	197	8,282	9,633	17,334	2,829	1,958	1,167	708
8	472	341	253	201	204	8,588	11,746	12,336	2,738	1,926	1,148	696
9	467	337	251	204	225	8,580	13,920	8,932	2,659	1,894	1,129	684
10	462	333	248	209	242	8,213	12,072	7,168	2,528	1,863	1,110	673
11	457	330	246	209	234	7,902	10,423	6,762	2,461	1,832	1,092	668
12	453	326	243	209	242	6,949	8,366	7,952	2,456	1,801	1,074	663
13	448	323	240	215	258	5,826	7,529	10,363	2,650	1,772	1,056	657
14	443	320	238	206	276	5,166	7,291	10,382	2,583	1,742	1,039	652
15	439	316	235	207	298	5,678	6,491	8,619	2,478	1,713	1,021	647
16	434	313	233	203	319	8,631	6,532	7,723	2,354	1,685	1,005	642
17	429	310	231	206	322	8,587	7,627	6,917	2,236	1,657	988	637
18	425	306	228	208	362	9,433	7,103	5,505	2,125	1,630	972	632
19	420	303	226	212	405	10,998	7,340	5,235	2,231	1,603	956	627
20	416	300	223	204	414	10,802	8,107	6,586	2,342	1,576	940	622
21	412	297	221	207	432	11,120	9,099	10,442	2,459	1,550	924	618
22	407	294	219	202	449	11,022	10,155	12,839	2,479	1,525	909	613
23	403	291	216	203	466	10,062	10,460	10,998	2,355	1,499	894	608
24	399	288	214	201	490	9,485	10,227	10,787	2,473	1,475	879	603
25	395	285	212	195	528	9,227	10,109	8,632	2,591	1,450	864	599
26	391	282	210	200	644	8,850	11,079	7,172	2,353	1,426	850	594
27	386	279	207	200	898	8,756	11,345	9,071	2,314	1,403	836	589
28	382	276	205	194	1,004	8,661	10,238	7,973	2,275	1,379	822	585
29	378		204	191	1,177	8,720	10,329	6,600	2,238	1,356	809	580
30	374		204	194	1,444	8,804	11,235	6,183	2,201	1,334	795	576
31	370		204		2,484		10,805	4,910		1,312		571
MEAN	436	319	234	203	490	8,021	9,603	9,450	2,591	1,704	1,024	653
MAXIMUM	508	367	273	215	2,484	11,120	13,920	19,691	3,820	2,164	1,290	782
MINIMUM	370	276	204	191	191	2,920	6,491	4,910	2,125	1,312	795	571

Gage operated Jun 5–Sep 26. Estimated Jan 1–Mar 30, Sep 27–Dec 31 (measurements at gage), Apr 1–Jun 4, Sep 16–21, Sep 23–24 (regression with USGS Phelan Creek 15478040).

Table B63. 2019 Delta River Below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	567	445	357	367	527	6,069	13,103	7,451	3,125	2,127	1,217	893
2	562	441	355	377	600	6,034	10,982	6,703	3,660	1,954	1,204	883
3	558	438	352	373	643	6,177	10,192	7,767	3,775	1,829	1,192	874
4	554	434	349	385	664	6,054	11,363	9,446	3,478	1,740	1,179	865
5	549	431	346	342	637	5,535	12,052	10,229	3,182	1,695	1,167	857
6	545	428	344	358	632	5,552	12,133	11,248	2,896	1,623	1,155	848
7	541	424	341	370	652	5,809	12,563	9,498	2,816	1,573	1,144	839
8	537	421	338	379	1,198	5,905	12,402	7,669	2,932	1,558	1,132	830
9	532	418	336	385	1,176	6,083	11,093	7,183	3,038	1,552	1,120	822
10	528	415	333	390	1,078	6,411	11,163	6,682	3,290	1,527	1,109	812
11	524	411	331	393	1,099	6,820	11,031	5,886	3,112	1,511	1,097	805
12	520	408	328	394	1,059	7,839	10,299	6,178	2,832	1,495	1,086	798
13	516	405	325	394	1,076	7,792	8,714	7,881	2,681	1,480	1,075	791
14	512	402	323	390	1,156	7,788	9,281	8,695	2,695	1,465	1,064	784
15	508	399	320	400	1,498	8,041	9,016	7,675	2,662	1,450	1,053	777
16	504	396	331	405	2,084	7,797	8,633	7,481	2,791	1,435	1,042	771
17	500	393	333	414	2,157	8,383	8,147	6,693	2,420	1,420	1,031	764
18	496	389	331	420	2,159	8,029	9,262	4,686	3,379	1,406	1,021	757
19	492	386	326	414	2,048	8,221	9,859	3,472	3,771	1,391	1,010	751
20	489	383	336	408	2,297	9,167	9,218	3,108	3,384	1,377	1,000	744
21	485	380	337	417	2,579	9,649	9,069	2,994	3,754	1,363	990	738
22	481	377	340	416	3,170	10,100	9,489	3,077	2,925	1,349	979	731
23	477	375	339	416	3,896	11,215	10,378	2,967	2,381	1,335	969	725
24	473	372	347	414	3,831	11,362	11,757	2,979	2,077	1,321	959	719
25	470	369	350	410	4,803	10,295	9,695	2,877	1,878	1,308	950	712
26	466	366	350	412	5,443	10,257	8,647	2,844	1,754	1,294	940	706
27	463	363	360	430	6,738	9,830	7,577	2,854	1,705	1,281	930	700
28	459	360	361	441	7,610	10,181	7,192	2,867	1,642	1,268	921	694
29	455		349	466	6,890	11,448	7,590	2,881	2,150	1,255	911	688
30	452		354	483	6,226	12,252	7,182	3,060	2,893	1,242	902	682
31	448		361		6,154		7,012	3,187		1,229		676
MEAN	505	401	341	402	2,638	8,203	9,874	5,749	2,836	1,479	1,052	775
MAXIMUM	567	445	361	483	7,610	12,252	13,103	11,248	3,775	2,127	1,217	893
MINIMUM	448	360	320	342	527	5,535	7,012	2,844	1,642	1,229	902	676

Gage operated May 16–Sep 26. Estimated Jan 1–Mar 15, Oct 10–Dec 31 (measurements at gage), Mar 16–May 15, Sep 27–Oct 9 (regression with USGS Phelan Creek 15478040).

Table B64. 2020 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	670	511	397	319	840	9,984	6,534	9,412	7,116	2,621	1,686	1,141
2	664	507	393	319	874	9,379	6,170	11,850	5,893	2,609	1,664	1,126
3	659	502	390	319	909	8,656	6,178	10,950	5,382	2,632	1,642	1,112
4	653	498	387	319	955	8,705	7,025	10,027	4,680	2,520	1,621	1,097
5	647	494	383	319	1,019	8,912	8,513	9,488	4,135	2,480	1,600	1,083
6	642	489	380	319	1,093	8,745	9,375	9,503	3,618	2,364	1,579	1,069
7	636	485	377	319	1,167	8,457	10,330	7,636	4,005	2,333	1,559	1,055
8	630	481	373	319	1,240	8,281	11,262	7,309	4,150	2,303	1,539	1,042
9	625	477	370	319	1,322	9,384	11,140	7,062	3,727	2,274	1,519	1,028
10	620	473	367	328	1,440	9,648	10,714	7,418	3,420	2,244	1,499	1,015
11	614	468	364	341	1,606	9,605	9,571	6,072	3,051	2,215	1,480	1,002
12	609	464	360	356	1,800	9,817	9,694	6,095	2,814	2,187	1,461	989
13	603	460	357	371	2,012	10,584	10,806	6,467	2,638	2,158	1,442	976
14	598	456	354	391	2,127	10,586	10,054	6,731	2,526	2,130	1,423	963
15	593	452	351	410	2,523	11,072	10,123	7,147	2,482	2,103	1,405	951
16	588	448	348	433	2,836	11,893	10,505	6,836	2,469	2,076	1,387	939
17	583	445	345	457	2,996	11,729	10,975	6,368	3,145	2,049	1,369	926
18	578	441	342	481	3,036	10,499	10,152	6,301	4,262	2,022	1,351	914
19	573	437	339	504	3,141	10,639	10,041	6,212	3,751	1,996	1,334	903
20	568	433	336	531	3,620	10,464	10,121	6,966	3,414	1,970	1,316	891
21	563	429	333	565	4,379	10,383	10,246	6,927	3,137	1,945	1,299	879
22	558	426	330	592	4,610	10,894	10,137	6,665	3,019	1,920	1,283	868
23	553	422	327	616	4,485	9,938	8,988	6,768	2,797	1,895	1,266	857
24	548	418	325	647	5,072	8,875	8,530	6,530	2,708	1,870	1,250	846
25	543	415	322	683	5,936	8,404	10,624	6,029	2,622	1,846	1,233	835
26	539	411	319	708	5,699	7,486	9,920	6,420	2,490	1,822	1,218	824
27	534	407	319	734	5,543	7,270	8,742	5,998	2,408	1,799	1,202	813
28	529	404	319	760	5,836	7,454	8,174	4,793	2,379	1,776	1,186	803
29	525	400	319	784	8,198	7,205	8,256	4,336	2,561	1,753	1,171	792
30	520		319	811	9,715	7,046	9,682	4,267	2,416	1,730	1,156	782
31	516		319		10,326		9,898	5,886		1,708		772
MEAN	590	454	351	479	3,431	9,400	9,435	7,112	3,441	2,108	1,405	945
MAXIMUM	670	511	397	811	10,326	11,893	11,262	11,850	7,116	2,632	1,686	1,141
MINIMUM	516	400	319	319	840	7,046	6,170	4,267	2,379	1,708	1,156	772

Gage operated May 15–Oct 5. Estimated Jan 1–Mar 26, Oct 6–Dec 31 (measurements at gage), Mar 27–May 14 (regression with USGS Phelan Creek 15478040).

Table B65. 2021 Delta River below Black Rapids daily mean discharge (cfs).

Day	JAN	FEB	MAR
1	762	509	354
2	752	503	349
3	743	496	345
4	733	490	340
5	724	483	336
6	714	477	331
7	705	471	327
8	696	465	323
9	687	459	319
10	678	453	315
11	669	447	311
12	661	441	307
13	652	436	303
14	644	430	299
15	635	424	295
16	627	419	291
17	619	413	287
18	611	408	284
19	603	403	280
20	595	398	276
21	588	393	273
22	580	387	269
23	572	382	266
24	565	377	262
25	558	373	259
26	551	368	255
27	543	363	252
28	536	358	249
29	529		246
30	523		243
31	516		239
MEAN	631	430	293
MAXIMUM	762	509	354
MINIMUM	516	358	239

Estimated Jan 1–Mar 31 (measurements at gage).

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